

SERVICE TECHNOLOGY

The Navy and Army seek central command of their IT systems. **PAGE 7**

**MOBILE WORKSTATIONS**

Maytag's Ernie Park and other IT managers detail their wireless rollouts and discuss future needs. **PAGE 5**

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**KNOWLEDGE CENTER HARDWARE**

Multiple Cores, Multiple Challenges

SPECIAL REPORT

Dual-core chips from Intel and AMD debuted in April and are headed toward your IT operation. They're fast, but they could put the double-whammy on your software licensing costs. Our in-depth analysis begins on page 47.

Online: Get up to speed on the new multicore chips with our latest webcast. **QuickLink a8150**

Large Users Hope for Broader Adoption of Usability Standard

International vote seen as boost for software test specs

BY PATRICK THIBODEAU

Badly designed software is costing businesses millions of dollars annually because it's

difficult to use, requires extensive training and support, and is so frustrating that many end users underutilize applications, say IT officials at companies such as The Boeing Co. and Fidelity Investments.

Despite those problems, most CIOs remain unaware of

a 3-year-old standard designed to help IT managers compare the usability of software products. Boeing's Keith Butler and Fidelity's Thomas Tullis both said last week.

But they and others believe that will change once the guidelines for reporting usability test results are approved as a worldwide standard by the International Standards Organization in Geneva. The ISO's technology standards committee voted late last month to accept the stan-

Usability, page 10

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IT Focus Steers Toward Risk Management

Regulatory mandates and mounting threat of security breaches are spurring initiatives

BY THOMAS HOFFMAN
NEW YORK

Regulatory compliance burdens, coupled with a series of highly publicized data security breaches, are leading a growing number of companies to strengthen their IT and business risk management practices, said attendees at a conference here last week.

For instance, recent customer data breaches involving companies such as Citigroup Inc. and ChoicePoint Inc. prompted ABN Amro Bank NV to re-evaluate its data protection policies, said Joe Bernick, head of Americas technology risk management at the

Amsterdam-based bank.

As part of that effort, ABN Amro is considering what data needs to be encrypted and is weighing the risks associated with storing encryption keys off-site with the data, he said.

"We need to understand those risks — that's a key initiative," said Bernick, a speaker at the IT risk management conference, which was organized

by Robert Frances Group Inc., a Westport, Conn.-based IT research and consulting firm. Such security concerns are particularly acute in the financial services industry,

Risk, page 66

Storage Security Gains Spotlight

NetApp seeks data protection edge via purchase of start-up

The move comes on the heels of several high-profile data thefts and losses in the financial services industry and other vertical markets.

Those incidents have spurred some IT shops to begin deploying technology for encrypting archived data.

NetApp user Chris Hughes said the deal will prompt him to take a close look at Decru's

NetApp, page 66

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"At Nissan, we expect to save at least \$135 million annually thanks to the efficiencies that Windows Server 2003 and Exchange Server 2003 are helping us achieve."

Toshihiko Suda

Senior Manager, *Nissan Motor Company, Ltd.*

An upgrade to Microsoft Windows Server System made it possible for 50,000 worldwide employees at Nissan Motor Company to have more secure remote access to their e-mail and calendars from any Internet connection, without the hassle and expense of a VPN. Here's how: By deploying Windows Server 2003 and Exchange 2003, not only did Nissan IT meet the CEO's demand for better global collaboration, they expect to save at least \$135 million by streamlining their messaging infrastructure. To get the full Nissan story or find a Microsoft Certified Partner, go to microsoft.com/wssystem

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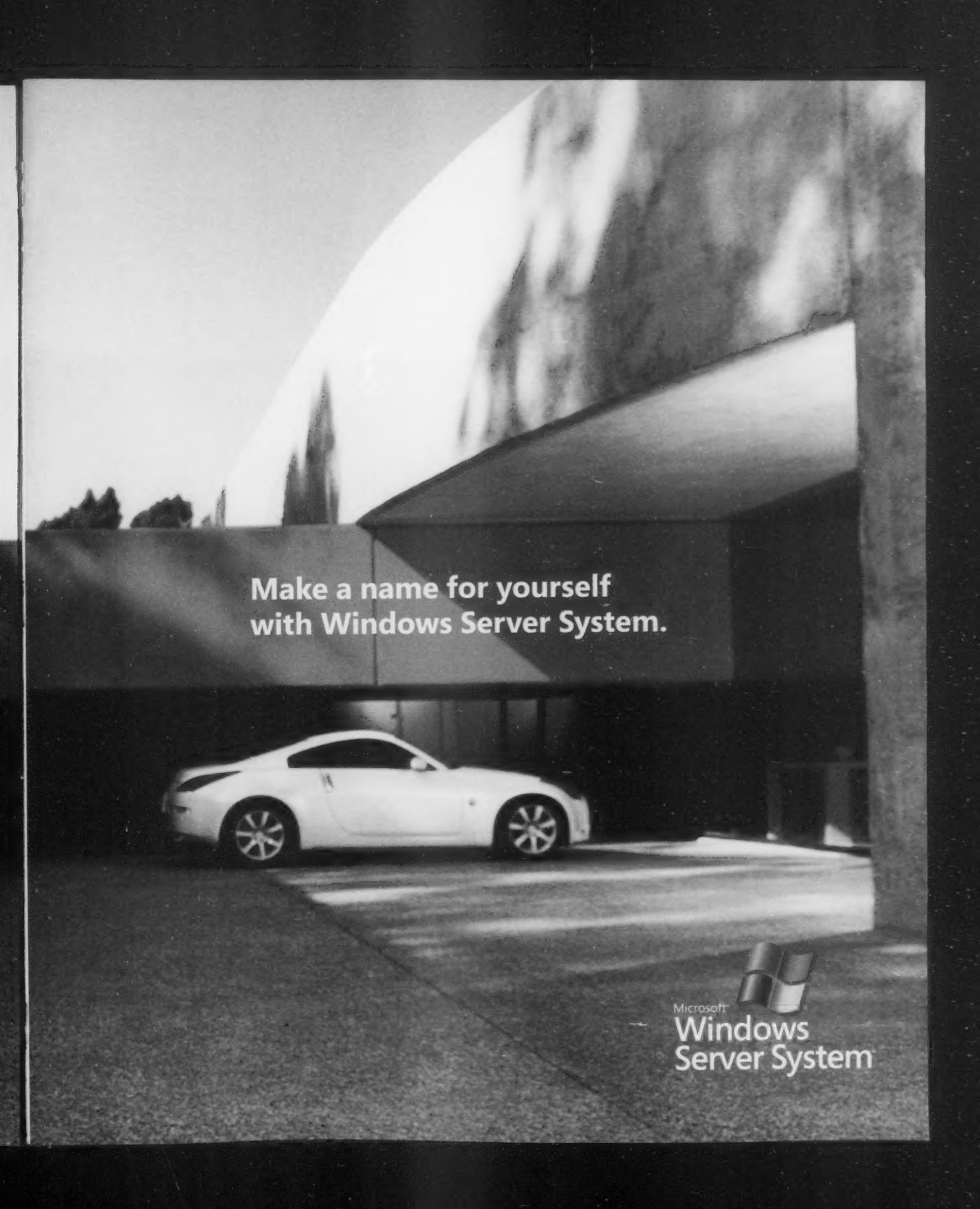


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Redefining Disaster

In the Management section: Recent world events have made companies and CIOs refocus on disaster recovery — and they're finding it ain't what it used to be. **Page 39**

Crossroads for VB6 Users

In the Technology section: Companies with lots of applications written in Visual Basic 6 must consider their options: Migrate them, or replace, rewrite or reuse them? The best approach often depends on the quality of the VB6 code and the experience of the development staff. **Page 25**

KNOWLEDGE CENTER HARDWARE

Multiple Cores, Multiple Challenges

EDITOR'S NOTE: This special report takes an in-depth look at the performance benefits of multicore chips, as well as the challenges they present for programming and software licensing. **PAGE 47**

48 Counting Cores. The need for speed is driving development of multicore processors, which pack two or more complete, independent CPUs onto a single chip. That innovation greatly speeds communication between CPUs and cuts waiting time.

Plus, we take a look at what major vendors are offering and future designs that are pushing toward hundreds of cores.



52 Pricing Penalty?

There's little doubt that the industry is quickly moving toward multicore technology, but IBM, Microsoft and Oracle are each taking a different approach to licensing software for it. That leaves IT executives like Southwire Co.'s Chris Easterwood questioning whether to adopt the new technology.



56 Mass-Market Multicore.

Most server software is already multi-threaded, but IT developers will need to learn to optimize desktop software and partition applications as multicore chips go mainstream.

58 The Almanac. A Taiwanese hardware maker comes up with a faster way to boot up Windows. And a survey indicates that blade servers could make up 35% of server purchases in three years.



60 Opinion: Upgrading computers just to get faster microprocessors is so yesterday — and so tomorrow, says Mark Hall.

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AT DEADLINE

BJ's Settles FTC Data Fraud Charges

BJ's Wholesale Club Inc. has agreed to settle Federal Trade Commission charges that it improperly stored and failed to encrypt customer credit and debit card numbers kept on store computers. The data was stolen by identity thieves to make fraudulent credit cards. The settlement requires BJ's to implement a comprehensive data security program and conduct biannual security audits for 20 years.

Power Outage Halts CheckFree Services

Customers trying to use online bill-payment services through CheckFree.com were deferred by a power outage that knocked the service off-line for about 14 hours last week. CheckFree Corp., which operates just one data center, said that its emergency plans worked as designed. Any customers charged late fees by their banks or other vendors as a result of the power outage will be reimbursed, the company said.

IBM to Buy Maker Of Mainframe Tools

IBM said it's acquiring partner Isogen Corp., a maker of mainframe asset management software. It plans to add Isogen's technology into its Tivoli line of systems management software. IBM has been reselling Isogen's SoftAudit for z/OS and Vista for about a year in conjunction with the Tivoli License Manager. Financial terms of the deal weren't disclosed.

German Agency Offers Security Tool

Germany's Federal Office for Security in Information Technology has developed an open-source tool to test the security of networked systems. The BSI Open Source Security Suite, available at no charge, is designed to check core systems for security weaknesses or recent attacks.

Feds Unready for New IT Threats, GAO Says

Report warns that agencies need better defenses, incident reporting guidelines

BY JAIKUMAR VIJAYAN

AMAJORITY OF federal agencies appear to be unprepared to deal with relatively new IT security threats such as spyware, phishing and spam, according to a report issued last week by the Government Accountability Office.

Adding to the problem, the GAO said, is a lack of guidance on what, exactly, agencies need to report about security incidents involving those threats, as well as how and to whom they should report the information. As a result, the government "is limited in its ability to identify and respond to emerging cybersecurity threats, including sophisticated and coordinated attacks that target multiple federal entities," the report warned.

But some analysts said that the lack of readiness identified by the GAO isn't very different from the situation in the private sector.

"If there was a GAO that looked at private companies,

you would find the same thing," said John Pescatore, an analyst at Gartner Inc.

The issue that's more specific to government agencies is the apparent absence of guidelines for reporting security incidents, Pescatore added. "The GAO has found that the mandates are there but the processes to make them work are not," he said.

Common Challenges

"Fundamentally, we face the same security challenges that a lot of corporations face," Lt. Col. Kenneth Blakely, chief of the Army Knowledge Online (AKO) portal for U.S. Army personnel, said in an interview earlier this month before the GAO report was released.

Those challenges include dealing with large volumes of spam, viruses and phishing attacks, Blakely said. In a bid to address those concerns, the portal unit last October implemented technology from IronPort Systems Inc. in San Bruno, Calif., that lets it scan

more than 100 million e-mails per month — 20% of which are found to be spam.

The tool lets AKO filter out viruses and spam messages and limit the size of e-mail attachments, Blakely said. He added that the unit's staffers also spend "a significant amount of time" educating end users about phishing.

The 79-page GAO report is based on input from security executives at 24 federal agencies. According to the report, agencies, including the FBI and the Internal Revenue Service, have already fallen victim to phishers (see box). Spam and spyware also pose growing threats, the report said.

But, it claimed, most of the agencies haven't yet begun addressing the new threats as part of their information security programs, as they are mandated to do under the Federal Information Security Management Act (FISMA).

There is also little consistency in the manner in which agencies report security incidents. Some notify the U.S. Department of Homeland Security's U.S. Computer Emergency Readiness Team (US-

Federal Phishing

Immigration and Customs Enforcement: E-mail claiming to be from an ICE agent referred users to the agency's Web site in an effort to steal money from relatives of U.S. soldiers killed in Iraq.

FBI: Spoofed e-mail asked users to verify personal data to avoid further investigation.

FDIC: A message tried to lure users to a bogus Web site that used the FDIC's logos, fonts and colors and sought bank account, credit card and Social Security numbers.

FIS: Spoofed e-mail and an official-looking Web site were used in an attempt to trick recipients into disclosing their personal and financial data.

SOURCE: GOVERNMENT ACCOUNTABILITY OFFICE

CERT), as required by FISMA, the report said. Others send incident reports to law enforcement agencies or don't report security events at all.

Officials at US-CERT didn't respond to calls seeking comment last week.

The GAO's report said US-CERT and the White House's Office of Management and Budget this summer plan to jointly release a set of formal reporting guidelines. The OMB also plans to include the emerging threats in its annual reviews of agency security programs, according to the report. **55091**

U.K. Incidents Show Shift to Targeted Attacks

ANGOING series of e-mail attacks against computer systems in the U.K. highlights a trend in which cybercriminals are shifting away from mass-mailing worms and viruses and focusing on more targeted sets of victims.

The U.K.'s National Infrastructure Security Co-ordination Centre last week published a report saying that more than 300 government departments and businesses are being buffeted by attacks designed to covertly gather data.

Unlike tactics used in phishing attacks and the wide-scale mailing of e-mail worms, the attackers ap-

pear to be targeting individuals who they believe have access to privileged information, the report said. It added that the IP addresses and e-mail header information used in the messages suggest that the attacks are originating in the Far East.

The attacks involve the use of e-mails that contain Trojan horse programs or links to Web sites with Trojan horse files installed on them. Once the Trojan horses are installed on systems, they collect usernames, passwords and system information; scan disk drives; and upload documents and data to remote computers, the report said.

Many malicious hackers are starting to tailor their attacks to go after high-value targets, said Mark Sunner, chief technology officer at MessageLabs Ltd., a U.K.-based provider of e-mail security services.

"Certainly for the last few years, what everyone perceived to be the main issue was the mass-mailing worm," Sunner said. "But there does seem to be a new trend where e-mail viruses are being created with the express intention of getting into specific organizations."

The disclosure in the U.K. came just two weeks after police in Israel said they had uncovered a spy ring

that allegedly used Trojan software to snoop into companies there [QuickLink 54777].

"It doesn't surprise me at all that these sorts of attacks are possible," said Pete Lindstrom, an analyst at Spire Security LLC in Malvern, Pa. But the new threat shouldn't "bother any security professional worth his salt," Lindstrom added. Standard precautions such as updated antivirus signatures, attachment filtering and antispam measures should be enough to identify malicious messages and mitigate the risks, he said.

- Jaikumar Vijayan

Device Management, Video Eyed for Handheld Systems

IT seeks tools to centrally manage mobile devices

BY MATT HAMBLIN
SCOTTSDALE, ARIZ.

Improved wireless device management tools and IP-based video-over-wireless applications were among the technologies that attendees at last week's Mobile & Wireless World 2005 conference said they hope to see within the next few years.

The event, which was organized by Computerworld and attended by about 300 IT managers, featured more than 20 case study presentations by companies and government agencies. But discussions also focused on what will come next as more companies link database servers and applica-

tions such as e-mail and ERP systems to mobile devices.

Several IT managers said they're looking for the ability to use embedded tools to centrally manage handhelds in order to make sure that the devices are secure and running the designated applications.

Laura Amato, IT contracts manager at PMI Mortgage Insurance Co. in Walnut Creek, Calif., said such tools could provide an additional level of security on top of policies that PMI has set to restrict the type of devices and applications that can be used by its several hundred handheld users.

During a session at the conference, Mooly Eden, vice president and general manag-

er of Intel Corp.'s mobile computing operations, said the chip maker plans to introduce its promised Active Management Technology (AMT) for wireless-enabled laptops in the next two years.

"We will try to hide a little IT manager in each notebook," Eden said jokingly. If a laptop is attacked by a virus, IT staffers will be able to use a wireless back channel to monitor the problem and send software patches, even if the PC is disconnected from the network, Eden said.

Rob Leach, Intel's worldwide marketing manager for mobile solutions, said AMT will first appear in desktop PCs, then in laptops with

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wireless adapters. Support for handhelds is further off but "is definitely envisioned," he said.

Focus on Management

Many companies are asking for more handheld management functions, such as the ability to remotely wipe a device clean of data if it is lost or falls into the wrong hands, said Christian Adams, group strategy director at Integrated Network Solutions, an integrator in Ottignies, Belgium.

Microsoft Corp. this month announced updates to its Exchange Server and Windows Mobile software that will include a device-wiping capability and other management features [QuickLink 54962]. Research in Motion Ltd. already provides such capabilities for its BlackBerry devices, but Adams noted that users have to install its BlackBerry Enterprise Server software to take advantage of them.

For new wireless applications, Eden said a dual-core CPU that Intel plans to release early next year as part of its Napa mobile computing platform will support voice over IP as well as videoconferencing among 10 end users.

Ernie Park, CIO at Maytag Corp. in Newton, Iowa, said he thinks videoconferencing for handhelds could be possible with increases in the bandwidth of wireless WANs. That would be "a tremendous application" to help improve communications with Maytag's 830 field service technicians and transmit technical drawings and other visual information via handhelds, Park said.

But during one session, John Stehman, an analyst at Robert Frances Group Inc. in Westport, Conn., asked how many of the 250 or so IT managers in the audience would be prepared to support video over handhelds in the next two years if it became available. Fewer than 10 people raised their hands. **55094**

MORE MOBILITY

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MOBILE APPS MAY BOOST REVENUE

SCOTTSDALE, ARIZ.
MAYTAG SPENT about \$6 million to install a mobile computing system for its 830 field service workers, said CIO Ernie Park. But, he added, it expects to gain \$13 million annually in revenue because the appliance repair technicians can work more efficiently and bring in more business.

Maytag's TechConnect application runs on handhelds from Intermec Technologies Corp. in Everett, Wash., and provides repair workers with directions and updates on service calls. Park said it can also track trucks via the Global Positioning System. Since the rollout was completed last October, the average number of service calls completed daily by individual workers has increased from 5.8 to 6.4, he said.

A new compensation system was introduced along with the technology: Maytag now pays field-service workers more if they reach a certain level of productivity and less if they fall below one. Even so, it took until April for workers to fully accept the system, Park said.

"The technicians originally saw it as a threat," he noted. SafeLife Auto Glass in Wichita, Kan., rolled out a mobile application for 200 of its safety glass installers in 2003 at a cost of \$100,000, using Nextel phones. By month's end, SafeLife plans to expand the system to 2,000 workers, who will be equipped with BlackBerry handhelds. Rod Ghani, assistant vice president of business development at SafeLife, said the initial deployment has yielded millions of dollars in new revenue because installers can get more real-time information about available jobs.

- Matt Hamblin



GHANI: SafeLife's mobile app has helped installers get more real-time data about available jobs.

PHOTO COURTESY OF MAYTAG AND COURTESY BY DEAN STEHMAN

Users Hear of Hard Lessons Learned in Wireless Projects

SCOTTSDALE, ARIZ.

MANY SPEAKERS at Computerworld's Mobile & Wireless World conference here imparted the lessons they learned from wireless projects — and some of those lessons were hard indeed.

First and foremost: Pick the right partner.

Drew Mazeitis, director of mobile technology at Ferrellgas, a propane distributor in Overland Park, Kan., said it was "very difficult to work with" the first vendor his company chose to help implement a field service wireless system.

After a year of working with the unidentified vendor, Ferrellgas recognized the magnitude of the project's problems and began to work on a parallel plan. That led to a successful pilot project that prompted it to "dump" the first vendor and pick a new one that was "much more aligned with what we wanted to

do as a business," Mazeitis said. Ferrellgas has now completed 70% of a system that wirelessly connects delivery drivers to their central offices, centralizes customer information and provides real-time metrics to monitor the company's operations.

Sometimes the decision to choose a new partner is easier to make, such as when your job is at stake. That was the situation faced by Dale Frantz, CIO at Auto Warehousing Co. in Tacoma, Wash.

The company experienced problems with a wireless tracking system installed at a new-car processing plant in Tacoma by a value-added reseller (VAR). The problems, which included decreasing wireless coverage, prompted Auto Warehousing's CEO to threaten to cancel the project.

Frantz said he put his job on the line by assuring the CEO that

the wireless project could work.

Getting it done involved picking a new VAR, which found that antennas hadn't been sealed correctly and were corroded by rain, resulting in the decreased wireless coverage areas.

Even more surprising, the replacement VAR discovered that some of the antennas had been installed upside-down. "To have found the antennas upside-down, you want to bang your head against the wall," Frantz said.

Mazeitis said Ferrellgas is now coming off one of its best financial quarters ever, managers have better tools so they can handle more people, and the same amount of propane is being delivered by fewer trucks.

The pilot Tacoma project has paid off for Auto Warehousing in reduced staff, increased efficiency and even the unexpected benefit of increased cash flow, Frantz said.

He added that the company now plans to roll out the wireless system nationwide.

- David Ramei

BRIEFS

Aruba to Upgrade Microsoft WLAN

Microsoft Corp. has chosen Aruba Wireless Networks Inc. to upgrade its global wireless LAN. Aruba's thin access points and WLAN switches will replace more than 5,000 Cisco Aironet access points at Microsoft facilities. Neither company would disclose the pact's value. The WLAN will cover 277 buildings in 60 countries and support 25,000 concurrent users and an estimated 100,000 devices.

Thieves Pilfer Data On Motorola Staff

Two computers containing personal information on Motorola Inc. employees were stolen from the mobile phone maker's human resources services provider, Affiliated Computer Services Inc. The data on the computers included names and Social Security numbers, Motorola said. The number of employees affected wasn't disclosed.

Seagull Purchases BPM Toolmaker

Seagull Software Systems Inc. has signed an agreement to acquire Oak Grove Systems Inc., a privately held maker of business process management (BPM) software. Terms of the deal weren't disclosed. With the acquisition, Oak Grove's Reactor process engine and tools will become part of Seagull's LegaSuite line of service-oriented architecture tools.

Trend Micro Buys Security Vendor

Antivirus and Web content security software vendor Trend Micro Inc. has acquired Kelken Inc., a vendor of IP filtering services. Trend Micro said the acquisition will allow it to offer network-level protection against threats such as phishing, pharming, botnet attacks and spam. The companies did not disclose the value of the deal.

IBM Expands Opteron To Its Blade Servers

Despite addition, AMD-based systems will still be marketed for scientific apps

BY PATRICK THIBODEAU

IBM last week extended its use of Advanced Micro Devices Inc.'s Opteron processors to blade servers. But it said it will continue to aim systems based on the chips at high-performance scientific computing applications, not general uses.

The new blade, which is scheduled to be available next month, will work within IBM's eServer BladeCenter chassis and support regular Opteron chips as well as the dual-core versions that Sunnyvale, Calif.-based AMD launched in April [QuickLink 53954].

One user who plans to try out the LS20 system is Jeffrey Skolnick, director of the Center of Excellence in Bioinformatics at the University at

Buffalo in New York. The center has built a clustered supercomputer that's used to conduct life sciences research and includes 266 IBM blades, each equipped with two of Intel Corp.'s Xeon chips. Skolnick said that he will benchmark the Opteron blades within the next several weeks. If he likes the results, he may mix and match them with the Xeon-based ones.

Performance Needs

The decision on whether to expand the system with the Opteron-based hardware is "a question of performance — how much faster is it [compared] to the existing processors," Skolnick said. Cost is also an issue, he added.

IBM has offered Opteron-

New Hardware

AMD Opteron LS20 for IBM eServer BladeCenter

- Supports two single- or dual-core processors.
- Can be configured with up to 8MB of memory.
- Holds two 36GB or 73GB internal disk drives.
- Runs Red Hat Linux, SUSE Linux and Windows.
- Starts at \$2,259.

based servers for nearly two years and has seen systems built with the AMD chips used primarily in high-performance research applications. Tim Dougherty, director of IBM's BladeCenter line, said the move to add an Opteron-based blade offering was primarily based on expanding the choices available to customers.

IBM's top line of x86-based servers, the xSeries, is built around Xeon. Earlier this year, IBM said it has invested more than \$100 million in developing a hardware architecture called X3 and a chip set called Hurricane to expand the functionality of the xSeries line.

Gordon Haff, an analyst at Illuminata Inc. in Nashua, N.H., said that IBM has been criticized in the past for trying to support too many technologies but that it is offering Opteron systems "really in response to specific needs in high-performance computing."

In contrast to IBM, competitors Hewlett-Packard Co. and Sun Microsystems Inc. have been aggressive about incorporating Opteron into general-purpose servers, said Charles King, an analyst at Pund-IT Research in Hayward, Calif.

But, King noted, users often surprise vendors by taking technology intended for one type of use and applying it to another. He said he wouldn't be surprised if something similar happens with IBM's Opteron-based blades.

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CASE STUDY

CVS Prescribes RFID for Retail Payment Terminals

BY LINDA ROSENCRANCE

CVS Corp. is installing RFID-enabled terminals for processing various types of payment-card transactions at its 5,400 pharmacy retail stores nationwide, according to Hypercom Corp., the maker of the terminals.

Phoenix-based Hypercom last week announced that CVS has bought 12,000 of its Optimum L4100 terminals. The devices include embedded radio frequency identification readers that can capture customer account information stored in RFID tags built into contactless payment cards or key fobs.

O.B. Rawls, Hypercom's president, said CVS has piloted the terminals at stores in the Phoenix area and is starting to roll them out nationally. The terminals have been configured to the retailer's specifications and can accept

magnetic swipe cards and smart cards in addition to the contactless cards and fobs, Rawls said. He noted that the RFID capabilities are designed to decrease the amount of time customers spend waiting in line to make purchases.

Although Rawls wouldn't disclose the value of the contract with CVS or even how much the terminals cost individually, he said the RFID technology typically adds about \$100 to the price of each machine.

CVS didn't respond to numerous requests for comment about the planned rollout. As part of Hypercom's announcement, Karl Taylor, the Woonsocket, R.I.-based retailer's CIO, singled out the RFID capabilities while noting that CVS chose the L4100 because of its "advanced functionality."

Sara Shah, an analyst at ABI

Research in Oyster Bay, N.Y., said she expects more retailers that operate small, specialized stores to follow CVS's lead on RFID.

"It doesn't seem to be on the radar screen of larger retailers like Wal-Mart," Shah said. "But it makes sense for smaller retailers like convenience stores and fast-food restaurants, or any place where the customer doesn't want to spend a lot of time in the store."

Mike Witty, an analyst at Framingham, Mass.-based IDC, said the rollout at CVS is an interesting project. But it isn't really a big deal in the overall development and adoption of RFID, he added.

"It's not RFID in the supply

chain like Wal-Mart is doing," Witty said. A handful of retailers are experimenting with terminals designed to facilitate payments, he said, "but it's not the breakthrough in RFID that folks are looking for." © 55083



CVS's PAYMENT TERMINALS
can capture customer information stored in RFID tags.

Juniper your Net.



"See fellas, it wasn't a dream! There is a company with heart, brains, courage and secure and assured networking."

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Navy Takes Command of IT Assets

Server-based discovery system has identified more than 250,000 devices

BY THOMAS HOFFMAN

The U.S. Navy has launched its first enterprise-wide IT asset management initiative, which is expected to help it make more-effective decisions on the thousands of disparate systems it has deployed worldwide.

Since January, the Navy has been using hosted software from Mountain View, Calif.-based BDNA Corp. to scan the IP addresses of hardware and software residing in U.S. facilities on its sprawling MCI Inc. network.

The effort has enabled the Navy to identify and locate more than 250,000 systems installed in some 200 locations, said Capt. Chris Christopher, a leader in the

Navy's Program Executive Office for Information Technology in Arlington, Va.

IT assets such as PCs, servers and routers were purchased and tracked by local IT managers prior to using BDNA's service, he said.

In the coming months, the Navy expects to extend the centralized network-scanning program worldwide to pinpoint at least 250,000 more systems deployed on bases and ships, according to Christopher.

Just last week, a group from BDNA began scanning U.S. IT assets on a regular monthly schedule rather than on an ad hoc basis, Christopher said. The data is stored in an Oracle repository, he said.

Christopher placed the annual cost of the BDNA asset-discovery services at "more than six figures." He declined to be more specific.

Worldwide Endeavor

Through the network-scanning program, the Navy hopes to get a better handle on its widely distributed IT assets. For example, the effort has already helped the Navy identify some obsolete operating systems that the group now plans to eliminate.

"We have every operating system that's been developed over the past 15 years, some of which I've never even heard of," Christopher said. "What we intend to do once we have our arms around everything out there is to look at what we have and make business decisions" about their use.

The program has yielded

other insights. In evaluating the distribution of the Navy's operating systems, for example, Christopher's team discovered "that we have a good chunk of Linux out there." Because the Navy hasn't standardized on a particular version of Linux, "it would probably make sense for us to develop a standard policy," he said. "Scanning on a monthly basis will allow us to see those trends."

The Navy's centralized approach to scanning and identifying its IT assets reflects a trend that's starting to catch on with other organizations, said Barbara Rembieska, president of the International Association of Information Technology Asset Managers Inc., a for-profit user association in Cleveland.

Still, she warned that centralized server-based discovery tools have limited effectiveness if organizations don't put the proper asset management processes in place beforehand. © 55076

New Sun, EMC Storage Tools Help With Compliance

BY LUCAS MEARIAN

Sun Microsystems Inc. and EMC Corp. today will release new and updated storage systems that can be used to take on growing corporate regulatory compliance tasks.

Sun's new StorEdge 5310 Compliance Archiving System, its first disk-based archiving system, is based on a network-attached storage (NAS) appliance Sun purchased from Procom Technology Inc. in Irvine, Calif., and includes its own compliance software.

Meanwhile, EMC unveiled upgrades to its Centera content-addressed storage (CAS) system that triple its capacity, increase its ability to replicate to multiple remote sites and can partition storage based on business application needs.

The Sun StorEdge 5310 can be configured with either Serial ATA disk drives or Fibre Channel drives and can scale to 179TB. The Sun box offers

storage retention policy enforcement, access controls and authentication of data integrity.

Tom Martin, director of NAS marketing at Sun, said the array targets companies undertaking Windows server consolidations, long-term archiving, and compliance projects.

Price Points

Unlike EMC's Centera, Sun's 5310 doesn't offer single-instantiation technology, which ensures that only one copy of a specific document or image is stored. The box instead is aimed at undercutting its competition on price, Martin said.

A 6TB model of the box sells for \$82,000. EMC's 4.4TB Centera model starts at \$148,000, while the 2.2TB version is less than \$100,000.

EMC said the Centera array's updated CentraStar management software now offers virtual pooling of storage. The box can also replicate its vir-

tual pools of storage to multiple sites, whereas before it could replicate only to one backup site.

"This puts access and security privileges by application between these pools of storage," said Sean Lanagan, director of product management and emerging products at EMC.

Another CAS Entry

The Sun and EMC moves come shortly after Storage Technology Corp. introduced the IntelliStore array, its first homegrown CAS system, which also uses ATA disk drives and targets regulatory compliance tasks.

Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H., contended that while most buyers of the technology cite regulatory compliance to justify their purchases, the uptick in sales of disk-based archival systems is really driven simply by the need to get at information.

Eunice estimated that to date, only 10% of such systems are used for regulatory compliance tasks. © 55087

Army Begins Consolidating Enterprise Application Servers

The U.S. Army is heeding lessons learned from corporate America by building data centers to ensure redundancy. Local servers running applications used for research and development and for location-specific needs won't be included in the consolidation.

Joe Capps, director of enterprise systems technology activity at the Army Network Enterprise Technology Command in Arlington, Va., said the move is expected to cut costs and make Army operations more efficient.

The plan, announced earlier this month at an Army IT conference, will start later this year with an effort over 12 to 18 months to create two data centers, each hooked up to four bases, Capps said. Over the next four years, all application servers running at all U.S. bases will be networked together in up to six data centers.

The servers to be consolidated include machines running applications such as logistics and business processing software. In addition, Capps said the project will include data storage consolidation. "Storage-area networks just make sense from a business standpoint," he said.

Until now, the Army's IT departments have consolidated only some Web applications. Because some of the Web consolidation work has been completed, the experience gained "should make the enterprise-level consolidation less

challenging," Capps said.

The initial effort includes two data centers to ensure redundancy. Local servers running applications used for research and development and for location-specific needs won't be included in the consolidation. That will allow bases to retain high-processing capabilities for their individual research, Capps said.

Capps wouldn't disclose a price tag for the project and didn't have any estimates of how much money the Army hopes to save. He said only that he expects the savings to be "significant."

Michael Dorch, an analyst at Robert Frances Group Inc. in Westport, Conn., said the Army's consolidation effort is on the same track as many private-sector projects.

"Government doesn't have a monopoly on moving slowly when it comes to building consensus," Dorch said, noting that such projects are a "very daunting task."

A potential benefit of the Army's plan, though, is that corporate IT managers could use it to add credibility to their efforts to consolidate servers inside their companies, Dorch said. "There are a lot of IT people who make perfectly valid arguments for server consolidation and still don't get the money to do it," he said.

- Todd R. Weiss

BRIEFS

Sun Issues Alerts On Java Bugs

Sun Microsystems Inc. has issued alerts about vulnerabilities in its Java software that security researchers say could let attackers execute malicious code on targeted computers. Weaknesses in Sun's Java Web Start and Java Runtime Environment could let an attacker gain back-door access to computers. J2SE updates that fix the bugs are available.

Yahoo Buys VoIP Service Provider

Yahoo Inc. has acquired voice-over-IP service provider Dialpad Communications Inc. and plans to use its technology to develop VoIP services. Terms of the deal weren't disclosed. Dialpad offers VoIP services to over 200 countries along with prepaid and calling-card services. The latter lets users make calls from a regular phone without the need for a PC. Dialpad claims over 14 million users.

HP Splits PC/Printer Unit Into Groups

Hewlett-Packard Co. announced that it has split its recently merged printer and PC groups into two separate divisions, undoing one of the last major decisions by former CEO Carly Fiorina. New CEO Mark Hurd named former PalmOne Inc. CEO Todd Bradley to head the new personal systems group, which makes handheld, notebook and desktop PCs.

Visa Tool Aims to Cut Credit Fraud

Visa U.S.A. Inc. has launched a security tool that allows merchants to instantly check transactions in stores or online, so they can identify fraud before a transaction is completed. Visa said its new "advanced authorization" system is expected to help prevent an estimated \$164 million in fraud-related losses over the next five years.

C ON THE MARK

HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY BUZZ BY MARK HALL



Location, Location, Location . . .

... is more than just a weak punch line to a stale real estate joke. It's the critical element missing from most wireless security tools, says Brian Wangerien, director of product management at Boston-based Newbury Networks Inc. His company's WiFi Watchdog tech-

nology fixes on the location of wireless users to help determine their access rights. "Authentication and encryption alone are like a steel door on a grass hut," Wangerien quips. By adding location information, he says, IT will know whether someone trying to reach an application server is a worker popping onto the corporate LAN from the cafeteria or a "war chalker" sneaking on from outside the building. WiFi Watchdog can also be used to track down the location of uninvited network visitors, which Wangerien says the U.S. Air Force has done on more than one occasion at an undisclosed air base. Version 5.0 of

ditions and prebuilt reports for regulatory-compliance audits. In addition, WiFi Watchdog 5.0 can automatically stop more than 100 threat signatures. Pricing starts at \$14,995.

Business continuity for e-mail option . . .

... available with messaging security service. Electric Mail Co. in Burnaby, British Columbia, offers a fallback plan for users of its Perimeter-Protect service in case your Exchange server keels over or (heaven forbid) your whole building keels over in one of this summer's hurricanes.

Users with Electric Mail accounts can rely on the antivirus and antispam service as a backup e-mail tool. According to Ian McDonald, the company's general manager, users can access Electric Mail's service via a browser during an Exchange outage, but their messages are sent using their company's own domain address. He says that's better than contacting

67%
Unsecured Wi-Fi networks in Boston, New York and Washington in a Newbury Networks "drive-by" survey.

business partners and customers with unrelated Hotmail or Yahoo accounts, as many users now do in emergencies. McDonald says that by year's end, Electric Mail plans to add full capabilities for searching the messages it stores. Monthly pricing for the service can be as low as \$3 per user.

Snooping on your rivals? Looking to . . .

... acquire an unsuspecting company? Well, your end users might consider disguising who they are as they mouse around the Web, says Lee Itzhaki, director of product management at Anonymizer Inc. The San Diego-based company offers a service that protects the identity of Web surfers.

While some may use the sly service to visit porn sites anonymously, businesses employ it to protect their corporate identities while doing everyday competitive analysis. Itzhaki says your browser is chock-full of information about you and your system, so companies can detect where you're from and then deliver phony Web pages to your machine — as he claims happened when one airline was researching a rival's fare structure. U.S. intelligence agencies use Anonymizer to scour terrorist Web sites for threat information while making it appear as if they're surfing from countries with known anti-U.S. constituencies, he says. Anonymizer supports only Windows systems now but expects to add Macintosh support late this year or early in 2006.

Trend Micro attacks spyware on . . .

... consumer PCs. So who cares? You do, because the capabilities that Trend Micro Inc. deploys for home users

with this week's release of its Anti-Spyware 3.0 software will be integrated into its central gateway product later this year, says Lane Bess, president of Trend Micro North America in Cupertino, Calif. The \$29.95 consumer version probes 150 components of a user's PC to determine whether malware has, for example, changed browser settings or modified host files.

Bess also points to the upgraded antispyware tool's need for 60% less RAM than earlier versions did, claiming that the reduction results in 75% faster loading times. He notes that spyware eradication efforts don't get the same cooperation among vendors that antivirus work does.

"The industry is evolving, and it's a little too soon for the open trading of files" among competitors, Bess says.

Keep an eye on your network . . .

... with Eye of the Storm, network management software from Entuity Inc. in New York. Version 4.0 of the network performance management, fault-detection and inventory-analysis tool ships next week and adds voice-over-IP management features, such as performance and availability testing and voice-quality reporting. Entuity's software integrates with CallManager, Cisco Systems Inc.'s VoIP call-processing software. Eye 4.0, as the product is known for short, also adds an "open modeling framework," says Michael Jannery, vice president of marketing at Entuity. Pricing starts at \$50,000. **Q 55048**



BESS:
It's too soon for
antispyware
competitors to
cooperate.

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An International IT News Digest

Australian Automaker Outsources Data Center

SYDNEY, AUSTRALIA

CARMAKER Mitsubishi Motors Australia Ltd. has outsourced its enterprise server operations in a five-year, multimillion-dollar deal with IT services provider Vectra Corp.

Adelaide, Australia-based Vectra announced last week that in an expansion of a previous contract, it will manage Mitsubishi's mainframe hardware and more than 100 midrange systems that control vehicle-assembly processes, including computer-aided design and parts inventory. The Mitsubishi unit is based in Clovelly Park in South Australia.

Tony Newman, the automaker's general manager for information systems, said Vectra's role will be "fundamental" to the successful production of Mitsubishi's new locally made car, which is code-named PS41 and is expected to roll out in October.

"IT plays a pivotal role in ensuring we can track and trace the component parts from external suppliers for our new model," Newman said. "Much of the planning for our

new car is about eliminating waste, reducing inventory and improving efficiency. Vectra has demonstrated strong project management capabilities that offer us the potential to improve the way we do business."

■ SIOBHAN McBRIDE, COMPUTERWORLD AUSTRALIA

EU Research Network Gets a Bandwidth Boost

BRUSSELS

THE EUROPEAN UNION switched on an upgraded version of its Geant multigigabit research network at a ceremony in Luxembourg last week. The new Geant2 network, which uses leased circuits and "dark" fiber-optic cables, is expected to give research scientists worldwide almost unlimited bandwidth for exchanging data.

The network should offer performance of up to 320Gbit/sec., said Dai Davies, general manager of the nonprofit organization that manages the network. Using dark, or otherwise unused, fiber capacity means that the cost of adding bandwidth becomes "trivial," he said.

The upgrade is expected to benefit researchers

GLOBAL FACT

\$200M
The size of Intel Corp.'s new fund for investing in Chinese technology companies.

SOURCE: IDG NEWS SERVICE

Continued from page 1

Usability

dard, which is known as the Common Industry Format for Usability Test Reports, or CIF.

Butler, who is a technical fellow at Chicago-based Boeing's Phantom Works research and development arm, said he thinks that the internationalization of CIF "is really going to provide it with the critical mass it needs."

That's partly due to the expected involvement of European users, who put a high value on standards, especially because of the cross-border business relationships within the European Union. CIF advocates said there has been a lot of interest from overseas companies, even though the American National Standards

Institute's certification of the reporting guidelines in 2002 [QuickLink 34596] didn't accelerate awareness of the standard in the U.S.

Cisco Systems Inc., IBM, Microsoft Corp. and other major IT vendors participated in the development of CIF. Even so, few vendors offer prospective customers usability reports that conform to the standard, in part because most users aren't asking for them.

CIF doesn't tell vendors what tests to conduct. Instead, it provides a common format for reporting test results based on a variety of usability metrics. To conform, the data has to be detailed enough to allow potential software buyers to replicate the tests.

The reports are intended to give users "some feeling about how much effort we might

have to put into training, and what are the real costs of ownership," said Jack Means, a usability researcher at State Farm Mutual Automobile Insurance Co. in Bloomington, Ill.

Boeing was one of the main drivers of the effort to create CIF, after officials at the aircraft maker became convinced

Common Industry Format For Usability Test Reports

WHAT IS IT? A mechanism for reporting software usability test results.

WHAT DOES IT MEASURE? Time to complete tasks, error rates and the number of assistance calls, among other metrics.

HOW DO I GET THE REPORTS? Ask your vendors for them.

WHY BOTHER? Usability problems add to TCO, according to advocates of the standard.

with large data-transfer needs, such as those working in astronomy and subatomic physics. Additional bandwidth is needed because, for example, two scientists sharing research findings from a radio telescope could "generate as much [network] traffic as two countries," Davies said.

■ SIMON TAYLOR, IDG NEWS SERVICE

Chip Maker Turns Network Over to Equant

MULTINATIONAL NETWORK operator Equant, a unit of France Telecom SA, last week announced that it has won a multiyear contract valued at more than \$100 million to provide voice, data and mobile communications services to STMicroelectronics NV, a Geneva-based semiconductor maker.

Equant will manage network operations — including voice over IP and an IP virtual private network used to transmit data — for more than 100 sites in 34 countries. "This deal consolidates all of STMicroelectronics' past service providers into one single vendor," according to a spokesman for Paris-based Equant.

"The goal is to totally turn over the network infrastructure to Equant and cut costs by 15% to 20%," said Otto Kosgalwies, vice president of infrastructure and services at STMicroelectronics, in a statement. ☎ 55042

Compiled by Mitch Betts.

Briefly Noted

Temenos Group AG in Geneva last week announced that Compagnie Monégasque de Banque, a private bank in Monaco, has selected its Temenos T24 software to replace the core banking system now in use at CMB. The software will run on IBM servers with database software from iBase International Inc. in Hemel Hempstead, England.

IBM Global Services last week opened its fifth software outsourcing center in India. The new center in Hyderabad will develop, customize and maintain applications for clients — especially SAP applications — and may employ up to 1,000 programmers by year's end, according to a spokeswoman at IBM India.

■ JOHN RIBEIRO, IDG NEWS SERVICE

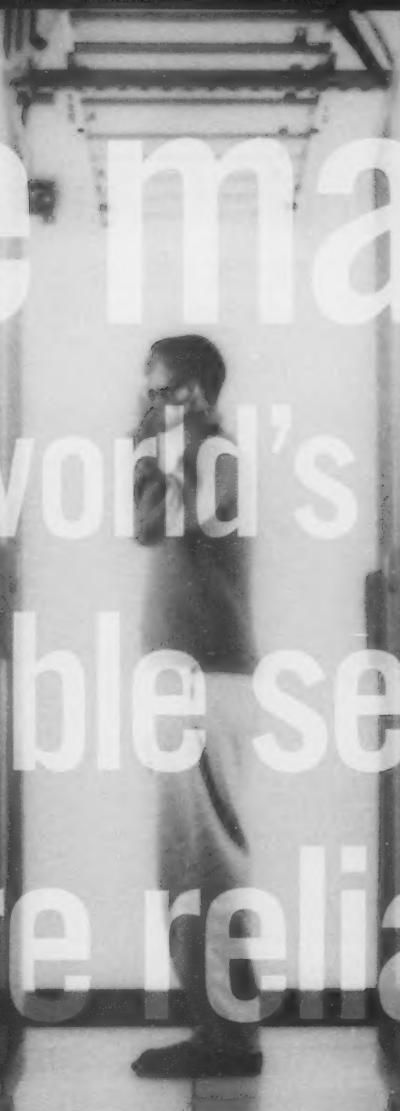
Rocket Software Inc., a software development firm in Newton, Mass., last week announced that it has acquired Astrac Ltd. in a \$35 million deal. Warwick, England-based Astrac develops business intelligence software for IBM servers.

ing to participants in the standards initiative.

"Once people start asking for it, vendors are going to realize that they're going to have to consider usability," said Mary Theofanous, a computer scientist at the National Institute of Standards and Technology, which coordinated the CIF development effort.

For many vendors, though, incorporating usability factors into software development will be difficult because it means changing the way they build applications, said Whitney Quesenberry, president of the Usability Professionals' Association in Bloomingdale, Ill. Taking usability into account, she noted, means having a process that not only considers business and technical needs, "but also user needs." ☎ 55089

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Oracle Pledges 2006 World Update

Users optimistic about future of green-screen line

BY MARC L. SONGINI
GRAPEVINE, TEXAS

CUSTOMERS of the once-moribund World applications are hoping that Oracle Corp.'s pledge last week to update the aging product line portends a long and fruitful life for the suite.

In addition to bringing out Service Pack 16, which adds new features to the software, Oracle quietly told some users that it plans to do a major revamp of the green-screen products next year.

Those moves, plus Oracle's earlier commitment to the suite through 2013, gave a half-dozen World users at the Quest International Users Group conference here last week some hope for the future of the line, which was slated for replacement by J.D. Ed-

wards prior to that company's acquisition by PeopleSoft in 2003. Oracle bought the combined firms earlier this year and pledged to update the World suite.

The Quest user conference was held in conjunction with the Oracle Applications Users Group conference.

"I was apprehensive at first," said Vincent Rancuret, information systems analyst at KIK Custom Products in Danville, Ill. "But they appear to be doing pretty well, and I now feel comfortable." The custom manufacturer runs the World human resources application and other software.

Only six months into Oracle's merger with PeopleSoft, it's still hard to say exactly how strong Oracle's commitment is, and some users are having a hard time believing they are going to get what they have been asking for, said Dave Hyzy, director of IT at Benderson Development Co., a World shop in Buffalo, N.Y.

NEW PRODUCTS

World Service Pack 16

- Supports statutory compliance with Sarbanes-Oxley Act.
- Offers self-service applications with 24-hour access.
- Includes regulatory and local business updates for South America and Europe.

World Version 'A9'

- Is not yet formally announced.
- Will allow A7 users to exploit manufacturing and other A8 features.
- Will consolidate Versions A7 and A8 into a single application.
- Includes new workflows.
- Will more easily integrate with other applications.

"We are wary because of a past history that has nothing to do with Oracle," he said.

In an interview, John Schiff, vice president and general

manager of Oracle's World operations, confirmed that Oracle plans to roll out a new release of World next year.

Though details of that project remain sketchy, Schiff said the unnamed new version will let users of World Versions A7 and A8 migrate to a single, consolidated platform and exploit the benefits of both versions. The next release will also have new workflows and development tools for easier integration with other applications, he said.

A new version of World was welcome news for some users. At Stolt-Nielsen Transportation Group, IT staffers have wanted to migrate from World A7 to A8 but have held back, fearing that they would be forced to move to the follow-on EnterpriseOne line, said Mickey Stayman, business systems manager at the bulk liquids transporter. A new release from Oracle is a step that could convince Stayman to update his World software.

Nevertheless, there is still some reluctance to accept Oracle's pledge. "So far, there are more questions than answers," said Jan Withers, applications programming manager at The Clark Construction Group Inc. in Bethesda, Md.

She fears that key World features that her company relies on may be dropped as part of Oracle's Fusion project to build a best-of-breed application that incorporates functions of all Oracle products. Withers also worries that Oracle won't take full advantage of IBM's DB2 database, which her company uses. So far, she says, "you hear about them doing it, then there's nothing."

Hyzy, although generally upbeat, said he doubts that Oracle will continue to certify IBM's DB2 database as the platform of choice for World.

Oracle has yet to make a decision about the database, said a company executive. **Q 55092**

MORE ONLINE

Q&A: Oracle's John Wooksey discusses the progress of Project Fusion:

QuickLink 55090
www.computerworld.com

Visa IT Unit CTO Discusses Open Systems and Security

BY LUCAS MEARIAN
David Allen, chief technology officer at Visa International Inc.'s IT unit, has recently overseen the opening of a new 70,000-square-foot data center and the rollout of an upgrade to its global antifraud system. Davis spoke to Computerworld last week about his security initiatives and IT challenges.

What technology challenges keep you up at night? The No. 1 technology challenge at Visa is continuing our unparalleled availability. As we introduce more and more change at an ever-increasing rate, keeping that going and developing systems architectures that are

more permissive to change keeps me going.

Are you looking to open systems to help you with that? We use open systems very extensively.

We have over 3,000 open systems servers running as part of our production services. Any impression that we're just a mainframe shop would be incorrect. All of our information-mining capabilities and data warehousing is 95% open systems. And most of our new development is open-systems-based.

How are you bolstering encryption as customers become more wary of identity and data theft? First,



Q&A

you have to look at the whole value chain from the merchant through the issuer and back again. Visa is investing hundreds of millions of dollars a year along the entire stream of security and data protection effort. Encryption is part of that, but it's not an answer all by itself.

Today, [data] on our messaging stream is unencrypted. And file exchange, that's almost always encrypted because those are the financial transactions. We hear the cry out there, and we're not standing still.

Are you considering encrypting data at rest? Absolutely.

On disk and tape? Yep. We followed a lot of practices over

time that separate key pieces of data that even without encryption tend to make [the data] useless unless collated. Taking that aside, we've begun a program to encrypt our data at rest and expect to be rolling that out over the next couple of years.

Is the new data center in Denver the largest you've built to date? Yes.

You have full redundancy in that data center. Do you plan to add that same type of redundancy to your other data centers? We do have a plan to upgrade our other centers. Exactly what they'll look like is still [to be determined]. We aren't beginning the next data center until we're finished with this particular operation.

What is the biggest challenge to the financial services industry as a whole today? The consolidation that's gone on and pay-

ments in general ... pose some huge challenges. When you look at our industry, the question of how to meet the needs of these megaplayers when you're a Visa and continue to serve the needs of vast number of others in the industry is the challenge.

The top 10 merchants have 8% of [personal consumer expenditures]. Clearly, the top 10 card-issuing banks have a huge percentage of the market. The main challenge is to be able to continue to meet their needs and the needs of the smaller players in the market.

What technology is going to help you do that? I think the ability to provide low-cost, rapid customization. Obviously, we're going to have less customization for the smaller players than the big players. It's just a matter of scale, but they'll still require things that need customization. **Q 55034**

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Coverage is not available in all areas. Global coverage based on coverage in 174 countries. Fastest claim compares Cingular's measured speed of its EDGE network to other carriers' speed claims for their national data networks. All marks property of their respective owners. ©2005 Cingular Wireless. All rights reserved.

BEA, Others Add Tools To Build, Manage SOAs

Vendors move to fill Web services infrastructure gap with legacy apps

BY HEATHER HAVENSTEIN

ENTERPRISES MOVING to service-oriented architectures are increasingly finding that they need an infrastructure for SOA management and security — and vendors are moving quickly to tap this growing market.

For example, BEA Systems Inc., whose history is anchored in the application infrastructure business, earlier this month unveiled technology designed to provide the infrastructure for enterprises to build and manage SOAs. And this week, Systinet Corp. and Iona Technologies Inc. are also releasing SOA tools.

BEA's AquaLogic family of new and rebranded products will provide messaging, Web services management and security to ease the flow of services, executives said. The tools are targeted at architects and application specialists rather than at developers.

San Jose-based BEA and the other vendors are maneuvering to gain ground in an expanding Web services software market, which research firm IDC predicts will grow from \$2.3 billion in 2004 to almost \$15 billion by 2009.

Seeking Integration

The new BEA product line is designed for users such as Verizon Communications Inc., which logs about 2.5 million Web services per day that are anchored by a mostly home-grown SOA that supports the design, deployment and management of Web services.

Mehul Shah, project manager for the telecommunications services provider's SOA, which it calls IT Workbench, said he's interested in seeing how the BEA products can help Verizon bring its systems

together to provide a comprehensive SOA platform.

"It is always good to see that companies like BEA are rolling out things that we started asking for two to three years ago before we even wrote the first line of code [for our SOA]," said Shah.

Verizon must find ways to include technologies from BEA, IBM, Sun Microsystems Inc. and others in its SOA "and still provide service management, security [and] business-activity monitoring across the board," Shah said.

Accredited Home Lenders Inc. in San Francisco has been using an SOA since the beginning of the year to help trans-

form its business model from traditional mortgage lending to a self-service model where brokers can submit applications, get pricing and receive approval online, said CIO Jim Pathman. The company is a beta user of the AquaLogic Data Services Platform and enterprise service bus (ESB) products.

With the platform, Pathman can extract data from a legacy application at runtime and use that data in other applications without having to make the legacy application a Web service. The service bus allows the company to integrate Web services without having to write code in the header of each service to tie them together, Pathman said.

"If we made a change on any of the legacy systems ...

NEW PRODUCTS

BEA AquaLogic

■ **AquaLogic Service Bus** (code-named Quicksilver) is an ESB that provides message brokering, dynamic routing and transformation, coupled with service life cycle management for enforcing service-level agreements.

■ **AquaLogic Data Services Platform** (code-named Liquid Data) provides a unified view of data from any source so services can be easily built, changed and reused.

■ **AquaLogic Enterprise Security** secures distributed applications.

■ **AquaLogic Service Registry** provides SOA governance and life-cycle management.

we'd have to go back to the header and recode," he added.

Shawn Willett, an analyst at

Current Analysis Inc. in Sterling, Va., said BEA needs a "second act to restart growth" now that its core application server market has leveled.

The new line must add capabilities to meet that need, he said. First and foremost, Willett said, the AquaLogic products must become stand-alone technologies that don't depend on other BEA offerings, especially the mainstay WebLogic application server.

Burlington, Mass.-based Systinet is set to unveil the latest version of its SOA Business Service Registry and a new policy manager product designed to simplify the creation, management and enforcement of policies that can govern an SOA.

Waltham, Mass.-based Iona Technologies this week will reveal plans to offer support for an open-source ESB called Celtix to be hosted by the ObjectWeb Consortium, an open-source community focused on developing distributed middleware. **55039**

Projects Prompt Quest for New Management Features

DENVER

THE NEED FOR SOFTWARE that can help IT staffers manage the implementation of SOAs and monitor their use was a big topic of discussion at this month's HP Software Forum here. Several attendees said that as more and more companies launch SOAs, sophisticated tools for supporting the technology are becoming increasingly important.

For example, DHL International GmbH plans to launch an SOA prototype in about a month, said Dennis Deane, the delivery company's Prague-based program manager for European IT services. DHL is eager to deploy an SOA because of expectations that it will enable easy reuse of applications, vastly reducing development time for both internal and external projects.

"It will eliminate the custom connections we have to make to

each [business] partner," Deane noted.

But managing the SOA will be complex and require the installation of software that can help automate the process, Deane added. He said DHL is exploring SOA management tools from IBM, BEA Systems and other vendors. It also wants to review the OpenView SOA Manager software that Hewlett-Packard Co. announced at the conference, which was jointly sponsored by HP and the OpenView Forum International user group.

DHL began a global rollout of HP's OpenView Service Desk 4.5 software in May 2004. The company has already begun to see a 20% to 30% reduction in the cost of many IT functions related to configuration

management and help desk services, said Gary Griffin, senior vice president and head of IT services at DHL's Scottsdale, Ariz., data center, one of three that the company runs globally.

Savings and Efficiency

The multimillion-dollar Service Desk implementation is expected to ultimately save DHL "tens of millions" annually by eliminating five licenses for rival help desk tools plus the servers they run on, Deane said. It should also improve IT efficiency by providing simplified help desk procedures for supporting DHL's 130,000 PCs and 2,600 servers, he added.

The success DHL is seeing on the Service Desk project is contributing to Deane's interest in reviewing SOA Manager. He noted, though, that it might be another one to two years before DHL has a full SOA in place. "An SOA would be a very big deal," Deane said.



DEANE says an SOA will "eliminate the custom connections we have to make to each partner."

HP officials and industry analysts said SOA Manager, which starts at \$25,000 plus additional costs for software agents and brokers, will be most applicable to large customers. The tool has been tested by a group of 20 companies globally over the past 18 months, according to Bill Emmett, HP's chief solutions manager for OpenView.

A senior vice president at a global financial conglomerate that was one of the SOA Manager beta testers said it hopes to be the first company to deploy the software. The user, who asked that neither he nor his company be named, said the firm expects to gain a competitive advantage within the financial services industry by using the management software.

"We don't think of this technology in ones or zeros, but as an enabler of business services," he said, adding that SOA Manager and the architecture it supports should help the firm "keep business processes simpler."

54965

- Matt Hamblen

Judge OKs Part of Novell's Suit Against Microsoft

BY GRANT GROSS

A U.S. District Court judge let stand two of the six counts in Novell Inc.'s antitrust lawsuit against Microsoft Corp., which accused the software giant of damaging Novell's business through monopolistic behavior. The remaining counts were dismissed.

In a ruling on June 10, Judge Frederick Motz of the U.S. District Court for the District of Maryland denied Microsoft's motion to dismiss two counts in Novell's lawsuit, which claims that Microsoft illegally damaged efforts by Novell to market its Word-

Perfect word-processing and Quattro Pro spreadsheet applications. The products are now owned by Corel Corp.

The two remaining counts are based on allegations that Microsoft illegally used its monopoly in the operating system market and that Microsoft entered into exclusionary agreements with computer makers.

Microsoft argued that Novell's claims aren't legitimate because its office productivity packages didn't compete in the operating system market, where the government's case had proved a Microsoft monopoly.

But Motz suggested that Microsoft knew of the effect its operating system monopoly had on other software, citing a 1997 e-mail from Microsoft Office division chief Jeff Raikes to investor Warren Buffet.

In the e-mail, Raikes wrote: "If we own the key 'franchises' built on top of the operating system, we dramatically widen the 'moat' that protects the operating system business. We hope to make a lot of money off these franchises, but even more important is that they should protect our Windows royalty per PC.... And success in those businesses will

help increase the opportunity for future pricing discretion."

The four counts thrown out by Motz had alleged that Microsoft held monopolies in the word-processing and spreadsheet application markets. The ruling stated that those allegations were never asserted in the U.S. Department of Justice's antitrust case against Microsoft, and Novell's civil antitrust case is based on that case.

The DOJ's case ended with a judge-approved settlement in November 2002.

Further Litigation

Novell filed the WordPerfect-related antitrust lawsuit in November 2004 [QuickLink 50747], within days of settling with Microsoft over antitrust claims related to Novell's NetWare network operating sys-

tem product. Microsoft agreed to pay Novell \$536 million in that settlement.

Motz rejected Microsoft's argument that Novell doesn't have a legitimate claim to damages related to WordPerfect because Novell sold the rights to the package.

Novell merged with WordPerfect Corp. in June 1994. In a related transaction at the same time, Novell purchased Quattro Pro from Borland International. The combined value of WordPerfect and Quattro Pro at the time of the transactions was more than \$1 billion, according to Novell. Less than two years later, Novell sold WordPerfect and Quattro Pro to Corel for approximately \$170 million. **Q 55027**

Gross is a reporter for the IDG News Service.

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U.S. Firm Loses Part of Massive U.K. IT Project

IDX replaced by Cerner, will take \$2M-\$4M charge

BY MARC E. SONGINI

ABURLINGTON, Vt.-based software vendor working on an \$11.2 billion IT overhaul of the U.K. National Health Service (NHS) has been removed from a major part of the project.

IDX Systems Inc., a maker of medical applications, earlier this month said that it agreed to end a contract with Fujitsu Services Ltd., the prime contractor for the project in the NHS's southern cluster region, which includes a handful of U.K. counties and islands.

The pact had called for Fujitsu to use an application jointly built by IDX and BT

Group PLC for the NHS's London cluster. BT Group is the prime contractor for the London cluster.

IDX said it expects that the costs of exiting the contract will force it to take a charge of between \$2 million and \$4 million in the second quarter of 2005.

Fujitsu acknowledged that it had ended the contract with IDX but declined to comment on the reasons for the move. London-based telecommunications firm BT Group said it is not involved in the southern cluster project.

Better Patient Care

The goal of the 10-year project, dubbed the National Program for IT (NPfIT), is to update the health agency's operations so it can deliver better patient care and service.

The NHS unit overseeing the IT overhaul, Connecting

"BT has clearly had significant problems fitting IDX's software to the U.K. system, and we find it hard to believe that Fujitsu and Cerner won't face many of the same challenges."

TOLA SARGEANT, ANALYST, OVUM LTD.

for Health, allowed Fujitsu to replace IDX's enterprise clinical software, Carecast, with a health care application called Millennium from Kansas City, Mo.-based Cerner Corp.

Meanwhile, BT Group and IDX will continue to collaborate on developing software

for the NHS's London cluster.

The move by Fujitsu to change vendors follows a warning in March by Richard Granger, director general of the NPfIT, that contractors that fail to meet deadlines can be dropped from the project.

"It was always envisaged that there might be some change of suppliers," said an NHS spokesman via e-mail. "Senior [officials] in Connecting for Health have publicly stated this on several occasions."

Assessing the Impact

The government spokesman said the removal of IDX from the southern cluster effort isn't expected to affect the overall project. According to the NHS Web site, the move "provides the opportunity for BT and IDX to redouble their focus on the delivery of services to the NHS in London."

The NHS spokesman referred specific questions on the subject of IDX's removal to Tokyo-based Fujitsu.

IDX declined to comment about the situation, referring instead to comments made by

CEO James Crook Jr. in a June 1 statement announcing the changes.

"Fujitsu Services' decision to withdraw [IDX] from the 'common solution' and to align itself with another provider for the southern cluster is disappointing," said Crook. "We believe that, together with our prime contractor, BT, we have overcome numerous obstacles in delivering on the national program."

In the statement, Crook predicted that the IDX Carecast system will be deployed to the London region later this year.

Tola Sargeant, an analyst at London-based research firm Ovum Ltd., said Fujitsu's move to remove IDX from the regional project comes after "some well-documented delays" in the rollout of the Carecast software.

"BT has clearly had significant problems fitting IDX's software to the U.K. system, and we find it hard to believe that Fujitsu and Cerner won't face many of the same challenges," Sargeant said in a note regarding the project.

© 54958

IBM, ACS Ink Disney To IT Services Deals

Contracts total \$1.3B; firms said to absorb 1,000 jobs

BY LINDA ROSENCRANCE

The Walt Disney Co. last week said it has signed separate IT services contracts valued at more than \$1.3 billion with IBM and Affiliated Computer Services Inc.

A \$730 million contract with IBM and a \$610 million deal with ACS, both set at seven years, will allow Disney to shift "certain back-of-house IT work" to IBM and ACS, said Disney spokeswoman Michelle Bergman.

She said that the affected Disney IT employees will have the opportunity to be

transferred to the services vendors, though she declined to say how many workers will be affected. A source put the number at 1,000, or about one-third of the Burbank, Calif.-based company's IT staff. ACS confirmed that its contract will bring about 500 Disney workers into its fold.

Bergman said that Disney expects the move to "improve organizational flexibility and the effectiveness of existing operations."

The transition will take place over the next two months, said Bergman.

IBM's Duties

Under its agreement, IBM will support Disney's IT infrastructure, which consists of mainframe systems, about

3,700 Unix and Intel-based midrange servers, and 1.4 petabytes of data storage, according to IBM spokesman John Buscemi.

Buscemi said IBM will be responsible for the ongoing development and support of key Disney software, including its SAP implementation and approximately 90 legacy applications from Disney's theme parks and its resort business. The applications will be supported on-site at Disney facilities as well as at an IBM application center in Tulsa, Okla., he said.

"Under the contract, IBM will centralize some operations and standardize processes, tools and methodologies across Disney's diverse computing infrastructure," said Buscemi.

He added that the new contract builds on a long-term relationship that was expanded in 2001, when IBM's business consulting services unit began

work to consolidate Disney's finance, human resources and payroll services onto a single SAP software platform.

Support From ACS

Meanwhile, Dallas-based ACS will support Disney's technology infrastructure and network architectures, as well as provide desktop help assistance and some computer processing services, said ACS spokeswoman Lesley Pool.

As part of the deal, approximately 500 Disney IT workers "will come aboard ACS and support Disney," said Pool.

"This is a significant opportunity to provide IT outsourcing services," Pool said. She pointed out that the agreement will enable Disney to focus more closely on its core business in the entertainment industry.

"It lets us pick up the technology offerings and bring them better technology, newer technology and take their



IBM WILL BE responsible for development and support of an SAP implementation and 90 applications for Disney's theme parks and its resort business.

technology folks and begin to advance them in their technology career paths," she said.

© 55046

Seagate Adds 10 Disk Drives to Product Line

PMR technology gives 2.5-in. drive a 25% capacity boost

BY LUCAS MEARIAN

Seagate Technology LLC has unveiled 10 new disk drives, including a notebook model that uses perpendicular magnetic recording (PMR) technology that boosts the capacity of its 2.5-in. drive by 25%.

With its announcement earlier this month, Seagate became the latest of several vendors to announce drives using the new PMR technology, which analysts say marks the start of an industry shift away from 45 years of longitudinal recording technology.

One of Seagate's new prod-

ucts is its largest-capacity disk drive — the Barracuda 7200.9 — a 500GB model based on standard recording technology. The high-end system, which includes a Serial ATA II interface, will ship to resellers by September for a price of about \$400.

The first PMR-based product that Seagate will ship, the Momentus 5400.3, is a 2.5-in., 160GB laptop drive with 25% more capacity than the vendor's previous notebook drive. It's slated to ship in next year's first quarter.

Other Vendors' Plans

Seagate's entry into the PMR business follows earlier moves by rivals Toshiba Corp., Fujitsu Ltd. and Hitachi Ltd.

For example, Toshiba plans to ship a 1.8-in. drive based on PMR this quarter and expects to ship a 2.5-in. drive for laptop computers by mid-2006, Amy Dalphy, marketing director for Toshiba's hard drive division in Tokyo, said last week.

"We see a strong trend for everything to want to be mobile and to want to have more storage capacity. PMR is the jump up in recording capacity that allows us to do that," Dalphy said. Toshiba has no immediate plans to ship enterprise-class disk drives using PMR technology, she noted.

Meanwhile, Fujitsu last month disclosed plans to start selling a PMR-based 2.5-in., 200GB drive in the first half of

2007. And earlier this month, Hitachi Global Storage Technologies Inc. disclosed that it was testing a 2.5-in., 100GB PMR drive and would have a 3.5-in., 1TB drive out by 2007.

Mack Kigada, a systems engineer at Providence Health System in Seattle, said PMR won't interest him unless it gives him greater read/write performance. Kigada said he's more interested in smaller, faster disks than denser, large disks for his data center.

"You don't want to have large disks, or you'll be wasting capacity," he said. "It's like having a big pizza that you have to cut into many tiny slices. I'd much rather have a bunch of smaller pizzas."

© 5501

Paul Kallender of the IDG News Service contributed to this story.

NEW PRODUCTS

Seagate Offerings

- A hard drive with full disk-based data encryption
- A 1-in., 8GB hard drive for handheld devices
- An 8GB CompactFlash Photo Hard Drive
- A portable 120GB drive with a USB port connector
- A 500GB external hard drive and FireWire 800 interface supporting data rates up to 800Mbit/sec.
- A 40GB drive designed for computers in automobiles, such as diagnostics and navigation systems
- A low-power, low-noise 40GB drive for gaming products

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Microsoft Pushes Ahead on Virtualization, Clustering

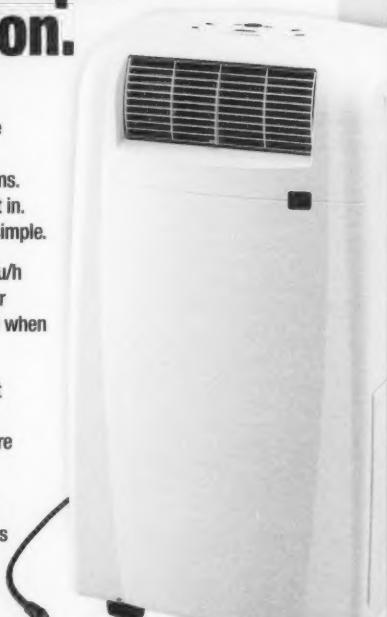
BY CAROL SLIWA

Bob Muglia, senior vice president of Microsoft Corp.'s Windows Server division, provided an update on the company's plans for its server operating system and related products during an interview at the TechEd 2005 conference in Orlando this month. Excerpts follow:

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At the Windows Hardware Engineering Conference in April, Microsoft said it was leaning toward eliminating your virtualization server software as a stand-alone product in the future. Can you flesh out any more details on the plans? Today, we have a product called Virtual Server that sits on top of Windows and provides virtualization capabilities. In the future, we're going to build the hypervisor and the virtualization stack into Windows. So while it's a whole new set of technologies, much, if not all, of what Virtual Server does today goes into the operating system. It becomes an operating system feature. At the same time, we're building a whole set of management services that will exist under [our] System Center [product line]. I do think that this is going to be a new product.

So you'll have a product with management capabilities for virtualized environments? Some management capabilities. Patching of images and image deployment, that's in [Systems Management Server]. Monitoring virtualized systems, that's a [Microsoft Operations Manager] feature. But there are some new features that are very important from the management perspective, like moving virtualized sessions from one machine to another. We don't have a product that does that today.

Will the built-in virtualization capabilities ship with the Longhorn version of Windows, or after Longhorn? In [April], we talked about it as "the Longhorn time frame."

And it still is the time frame. When we think about operating system generations, I think about the '07 generations of the operating system — say, '07 to '08 — as all being Longhorn, maybe even to '09 for Longhorn R2... So the virtualization features are in the Longhorn time frame, but it's not in the initial release of Longhorn.

Microsoft said it will ship a Compute Cluster Edition of Windows Server 2003 in the first half of next year. Why do you want to get into the high-performance computing market? It's about time. It's one of the faster-growing segments of the server business.

How different will the cluster edition be from the other versions of Windows Server 2003? It's the same operating system with two differences. One, we basically turn off a bunch of workloads, so you can't do a bunch of other things on it, because it will be priced very competitively. Pricing on this will actually be less than the Standard Edition for the operating system piece itself.

Then there's a whole set of services that need to run on top of that — batch schedulers, the ability to connect these computers with high-performance connections and those [kinds of] things. Even in the Linux space today, people tend to buy those things from commercial companies, and they pay a fair amount for it. I think we'll have a very competitive offering. **Q 55029**

READ MORE ONLINE

An extended version of the Q&A with Muglia is available on our Web site:

QuickLink 54913
www.computerworld.com

Microsoft Patches Critical Holes in IE, Windows

MICROSOFT last week released 10 software patches, including three rated "critical," in an attempt to plug security holes in a variety of its products.

The critical fixes issued as part of the software vendor's monthly patch update include one for a flaw in Internet Explorer that could allow attackers to use Web pages containing malicious code stored as Portable Network Graphics files to gain control of systems. Microsoft said it also found similarly dangerous bugs in the Windows HTML Help system and its Server Message Block file-sharing protocol.

Though it merited only a "moderate"

severity rating, a bug in the company's Microsoft Agent user-interface technology is potentially serious because it could let attackers gain control over pop-up messages and trick users into downloading malicious code, said Russ Cooper, senior scientist at IT security vendor Cybertrust Inc. in Herndon, Va.

Stephen Toulouse, security program manager at Microsoft's Security Response Center, said the vulnerability was rated moderate because Agent isn't always automatically enabled and because the flaw doesn't directly allow attackers to control systems.

- Robert McMillan, IDG News Service



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**HOW DID ONE COMPANY REDUCE
ITS TCO? THEY SWITCHED FROM
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Microsoft



"When we calculated the total cost of ownership for Red Hat Linux using a 10-year Net Present Value Model, we were surprised at how much higher it was than for Windows."

—J.E. Henry, CIO,
Regal Entertainment Group

Regal Entertainment Group, the largest movie theater operator in the U.S., ran its POS concession and ticket terminals on Red Hat Linux. However, they saw that it lacked the vendor support and remote management tools they needed to support their strategic plans. After an in-depth comparison, Regal found that Windows Embedded would deliver a lower TCO, improved security, and fewer risks. "With Windows, we get an integrated, easily managed platform that can extend from the data center to our POS devices," says Cliff DeYoung, CTO at Regal.

To get the full case study, other case studies, or third-party findings, go to microsoft.com/getthefacts


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DON TENNANT

Certifiably Mad?

WHOA. You just never know what's going to touch a nerve. My "Certifiably Concerned" editorial last week, in which I argued against a de-emphasis of IT certifications



DON TENNANT is editor in chief of Computerworld. You can contact him at don_tenant@computerworld.com

[QuickLink 5492], created quite a stir. A lot of IT pros think I'm mad (in the crazy sense) for suggesting that certifications have any real bearing on career advancement and compensation. And they're mad (in the angry sense) that people like me are perpetuating what they believe to be the myth that "certs" deliver any real value to an IT organization.

A sampling of reader comments makes clear how strongly some feel about the issue:

■ "The more important IT becomes, the more the nontechnical managers will want to have authority over it, so the problem of determining who is really good at IT will only get worse. For organizations in which the nontechnical overreachers are already in control, certification is a crutch, a poor but politically defensible substitute for knowing what and how well one's subordinates are doing."

■ "Those who have built their reputations the hard way are constantly in demand and probably don't have time to pursue outside certifications because they are constantly digging into the literature and on the phone gaining the knowledge necessary to handle their current project load. Any certification quickly becomes outdated and will not impress anybody in a busy shop except the human resources manager."

■ "I think there is very little correlation between certified IT skills and quality IT work. The difficulty is that testable knowledge of any IT discipline is only a small subset of the skills that a practitioner needs. These untestable (or difficult to test) skills include perseverance (which the au-

thor mentions), communication skills and problem-analysis skills."

■ "I've worked with way too many certified people who couldn't cut it. From my point of view from 34 years in the trenches, I'll take the experience any day.... I've had a number of certs over the years and don't feel they had any real value other than using them to try to

sound impressive to someone who doesn't know any better."

■ "I've seen too many MCSEs who don't have a clue in the real world. (Not to mention the total misuse of the word *engineer* in that certification. Of course, I'll admit I'm biased, as I graduated as an electrical engineer.)"

■ "Technology certifications... mostly serve as marketing hype for a vendor and (gasp) even provide a revenue stream to that vendor and its training partners. If a company is relying heavily on certifications, as you

advocate, that just means that management is not exercising appropriate oversight of their staff regarding ongoing professional development. In effect, such oversight and coaching has been delegated to the certification."

OK, I get it. You don't have to hit me with a brick. Possessing a technical certification doesn't necessarily equate with possessing a technical skill. Certs aren't a substitute for real-world experience. I couldn't agree more with either point. But there needs to be a consistent, quantifiable means of documenting the skills assets of your IT organization. Otherwise, expanding and improving that institutional skill set will be an ad hoc activity, and efforts to optimize the quality and productivity of your workforce will suffer.

One reader called technical certification "an insurance policy that protects our essential systems and infrastructure." Yes, it's that important. If available certifications and the processes that yield them aren't good enough, demand better. Abandoning them is acquiescing. And acquiescence has no place in the IT profession. **Q 55056**

Don Tenant



DAVID MOSCHELLA

Change at Hand for PC Management

HOW DO YOU know when a best practice is about to give way to a next practice? Typically, you look for credible signs of change and a compelling story line that points the way toward a different future. Well, if you believe in those two criteria, you might want to start to rethink the way your company manages its PCs.

Since the beginnings of the client/server era in the mid-1980s, organizations have sought to standardize their PC configurations to minimize installation, support and migration costs and to ensure a consistent application and security environment. Clearly, these remain important company goals, and not surprisingly, this practice has become pervasive in the marketplace. It still makes sense for most enterprises.

However, there is growing evidence that this one-size-fits-all approach is starting to break down and may not be nearly as efficient as you might think. Over the years, laptops, handhelds and cell phones have all become powerful objects of fashion and desire, and many of your most valuable employees simply won't be happy with standard-issue devices. They are clearly looking for more flexibility and choice.

More important, many of these same employees have shown that they are perfectly willing to spend their own money on IT products and services if that helps them do their jobs in a more effective or satisfying manner. Given today's tight IT budgets, this factor shouldn't be underestimated, especially since individual consumers will often get much more for their money than the typical corporate purchasing department does. The idea that centralized PC acquisition will save money has been obsolete for many years.

Over the past year, we have seen several multinational companies begin



DAVID MOSCHELLA is global research director at the Leading Edge Forum, a Computer Sciences Corp. company. Contact him at dm@computerworld.com

to experiment with various allowance and cafeteria-style programs, where employees are given money to spend on technology and the option of supplementing it with their own money if they want a more capable or aesthetically pleasing device. This is pretty much the way that many company-car programs work here in London.

The result is device diversity, but that's becoming much more manageable as companies migrate toward pure Web-based environments, where the need for client-specific software largely goes away. Clearly, global enterprises are at very different stages of this transition, but the overall goal is widely recognized and shared. Once Web-enabled applications become pervasive, pretty much any PC — even Macintoshes — can support the industry-standard office, e-mail, browser and security software.

As these shifts occur, companywide PC service contracts will likely lose their appeal. Already, many company help desks are shifting away from traditional break/fix tasks and are instead responding to more complex "How do I . . . ?" questions. In these cases, having a standard machine is largely irrelevant. In the odd case where a PC does physically break or require basic desktop software support, on-demand services such as Geeks On Call can provide more cost-effective alternatives.

None of this should be surprising. Companies are increasingly opting for menu-based benefits programs as a way to more efficiently meet their employees' needs. It isn't hard to envision a future where many employees are happy to provide their own PCs, much as they already do at many universities. Someday, we will no longer expect our companies to pay for and fix our PCs than we would expect them to fix our cars. Then we will have truly personal computers, and the real company savings will begin. **G 54975**

VIRGINIA ROBBINS

It Takes a Tough IT Department

IT'S NOT SUPPOSED TO rain in Northern California in June, but it was. My new 2-year-old dog, a 74-pound black

flat-coated retriever named Charlie, eats shoelaces if he doesn't get enough exercise, and I was running out of shoes. Proving that misery really does love company, I persuaded my husband to join us, and out into the rain we went.

As Charlie bounced from tree to tree hunting for squirrels, my husband and I chatted. I'd been traveling over the past couple of weeks, and we had lots to catch up on. His father was doing well; my last flight had been delayed only an hour. Eventually, we got around to work.

I told him how I've had an opportunity to be involved in company evaluations, an activity similar to one that I had experienced four years ago. Over the past four years, the way in which IT is valued has changed dramatically. Back then, valuation teams assumed that IT departments were run more like a dot-com, lacking governance, procedures and process. IT has matured a great deal since then. Best practices in governance, operational controls and cost allocations, along with other improvements, have been implemented.



VIRGINIA ROBBINS is CIO and managing director at Chela Education Financing in San Francisco. Contact her at v.m.robbins@yahoo.com.

Today, most IT departments have absorbed Internet technologies and improved operations. What has changed is that we are more alike in our practices than we were in the past. In fact, doing IT well no longer creates value. Instead, value is reduced when IT is not done well. IT is no longer assumed to add value; it's assumed only that it could take it away.

Simply put, doing IT well has become a commodity. In the U.S., once something is seen as a commodity, it's Wal-Mart: Price becomes the primary differentiator.

When price is the only thing that matters, then businesses move their operations to the lowest-cost provider. The offshoring of development was first; next on the list is infrastructure. Infrastructure outsourcing has been declared by many as the next new thing in IT cost savings. Already, a few large firms are moving to outsource their infrastructures.

So, unless you want to work outside of IT, you have two choices: Be outsourced, or think like the late Frank Perdue. Remember him? If you lived

east of the Mississippi River in the 1970s or '80s, you probably caught his TV ads; he was the homely-looking CEO who sold chickens. Before Perdue started personally hawking his brand, chicken was seen as a commodity. He changed that through clever marketing. It's been at least 15 years since I've been back east, but I can still remember Perdue's slogan: "It takes a tough man to make a tender chicken."

What's your slogan? Is it "Cutting costs daily because the CFO told me to"? Doing IT well isn't enough anymore, because others can do the same at a lower cost. You need to be looking at what you're doing and making sure that it's not just IT done well, but IT done well with a consistent marketing message. It really is all about marketing. At Chela, a customer-focused student loan provider, my department's slogan is "We're in IT for the students." Very few can take care of our students as well as we do.

What's your slogan? Without one, you could be like Charlie chasing squirrels in the rain. It's a lot of work without much reward. **G 54969**

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READERS' LETTERS

Laggards' Rationale

JUST A NOTE on the story "Wireless Leaders & Laggards: Financial Services" [QuickLink 53680]: Many examiners are adamant that banks cannot use wireless because of the threat to information security. When I worked IT in a bank in Arkansas, the examiners were so convinced wireless was the undoing of all security that management adopted a policy outlawing wireless, along with PDAs.

J. Melancon
Baton Rouge, La.

care, the bulk of a workforce is mobile within a facility, making traditional wired architectures infeasible.

When I joined The Jackson Clinic, a 140-physician practice spread throughout western Tennessee, back in 1998, it had just purchased an electronic medical records system, Physicians' Workstation by Wang Healthcare (now Integrated Healthcare). The next year was spent planning, building and configuring the base infrastructure to prepare for the physicians' transition from a paper-based system to an electronic one. We found that physicians don't want to seem preoccupied when sitting in front of patients. Leafing through a paper chart is acceptable, but a monitor creates the perception of a barrier. In addition, the patient can't tell if the physician is accessing medical information, playing a game or sending e-mail.

From 1999 until 2002, our physicians used the EMR strictly as a look-up tool. It wasn't until late

2002, with the debut of the tablet PC, that we were able to put a device in physicians' hands that they felt comfortable taking into an exam room. Since a widespread wireless/tablet deployment at the end of 2002, our chart has been completely electronic.

Mobile computing has finally evolved to the point where health care can realize some of the productivity and cost savings that most other industries have been enjoying through their wired architectures for decades. The challenges we face no longer stem from technological limitations; we now have available to us innumerable solutions in order to deal with just about any connectivity, security, bandwidth or other requirements that we might meet.

A shift has occurred away from the limitations of technology. Instead, health care finds itself faced with the challenge of providing these new solutions to physicians in a way that doesn't overwhelm and distract them from providing high-

quality care. The trick is to get physicians to use the technology without having to spend time thinking about it. Our physicians have been prescribing electronically for over a year now, but we still have a ways to go to get to the point where providers feel comfortable enough to do all documentation at point of care.

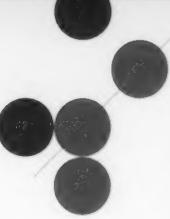
Mark Wiacek
Network manager, The Jackson Clinic PA, Jackson, Tenn.

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 For more letters on these and other topics, go to www.computerworld.com/letters.

Comfort Is Key for Health Providers

I FOUND THE ARTICLE "Wireless Leaders & Laggards: Health Care" [QuickLink 53683] very interesting, but I think the point has to be made that health care has been several years behind other industries in the realm of IT because of the nature of our business. In health



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TECHNOLOGY

06.20.05

CHRISTOPHER PESOLA WAS SO eager to see how well the upgrade wizard Microsoft Corp. supplied would migrate Visual Basic 6 applications to its new .Net development environment that he tried a beta release in early 2002.

Pesola, associate director of application services at Learning Care Group Inc., would eventually learn that the tool could convert 75% to 80% of the VB6 code in the Novi, Mich.-based company's lightweight applications — those with fewer than 1,500 lines of code. But it would fare much worse with the major VB6 application that its 470 day-care centers use to run their operations, migrating just 20% of the code.

"That just wasn't worth it for us," Pesola says.

Increasing numbers of IT shops are confronting the decision of whether to modernize their aging VB6 code. In some cases, that's because Microsoft ended the free mainstream-support phase for its VB6 tool as of March 31. Over 7,000 people — including more than 250 Most Valuable Professionals that Microsoft has honored for their contributions to technical communities — have signed an online petition since March to urge Microsoft to continue to support, develop and update the core VB language.

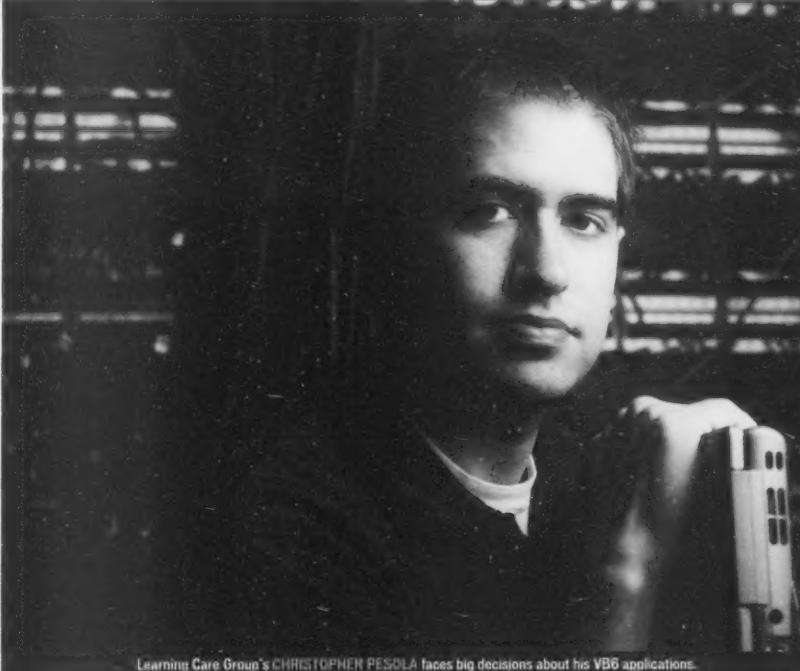
The uproar, at least in part, stems from the substantial changes between the old and new VB development environments. VB.NET makes use of a different runtime, different class libraries and a different object model. And developers often face a moderate-to-steep learning curve to master the .NET Framework and shift to the object-oriented programming model that will enable them to reap the full benefits of the new environment.

Microsoft has shown no signs of caving to the demands of the protesters, maintaining that they represent a minority of the millions of VB developers. More users prefer the new tools, especially for building Web-based applications, the company says. Nonetheless, Microsoft has pledged to improve its migration tools and the interoperability between VB6 and VB.NET, which will be called VB 2005 with the next release, due in November.

Companies will continue to weigh their various options in the interim. They can run their VB6 applications until they lose their usefulness. They can use the .NET upgrade wizard and rewrite code that does not automatically convert. They can migrate parts of an application to .NET and leave parts in VB6. They

Continued on page 28

DLEAH TRACY



Learning Care Group's CHRISTOPHER PESOLA faces big decisions about his VB6 applications.

CROSSROADS FOR VB6 USERS

WHICH PATH TO TAKE? MIGRATE APPLICATIONS TO .NET, OR REPLACE, REWRITE OR JUST REUSE THEM? THE BEST CHOICE OFTEN DEPENDS ON THE QUALITY OF YOUR VB6 CODE AND THE EXPERIENCE OF YOUR STAFF. BY CAROL SLIWA

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Continued from page 25

can rewrite an application in VB.NET or another language, such as C# or Java. Or they can replace it.

Microsoft says an IT shop is likely to try each of those approaches at one time or another, with the decision largely dependent on the quality of the VB6 code and the application's business value.

Learning Care Group tried Microsoft's code adviser and upgrade wizard with all six of its VB6 applications. The tools analyzed the code line by line, changed the portions that it could migrate to .NET and flagged the portions that it couldn't migrate, Pesola says. The company then had the option of rewriting the problem parts in VB6 and trying the wizard again, or rewriting them in .NET.

Pesola chose to rewrite portions of a small customer service call-logging application and spent about five days developing, deploying and testing it. But that was the only time Learning Care chose that migration route. The company replaced two VB6 applications with packaged software. It's looking for a better option for an application used by its finance group. And it realized that one VB6 application was no longer used very much and decided to leave it running as is.

For its largest day-care center management application, Learning Care put out a request for proposals after finding that only 10% to 20% of the code would convert. Pesola says he tried through rewrites to boost the number to 50%. But when he got to about 25%, he realized that it wasn't worth the effort because of the application's functionality limitations. Learning Care paid about \$1 million for a newly architected .NET-based application from NuSoft Solutions Inc., a Microsoft Gold Certified Partner in Troy, Mich., and hopes to maintain the application on its own within the next year or two, Pesola says.

The decision-making process will be far more involved for A.G. Edwards Inc. The St. Louis-based brokerage has about 700 VB6 applications, and so far it has migrated only about a half-dozen to either Java

or VB.NET, according to David Strickland, the company's enterprise portfolio architect.

Strickland says he can't see the point of tweaking VB6 applications merely to get them to run on the .NET Framework. He wants the company to convert its client/server applications to well-architected multitier applications that can better take advantage of .NET's new capabilities.

Since 65% of A.G. Edwards' 190 programmers work in VB6, shifting developers to the new environment will be just as critical as moving the applications. The company is setting up a competency center to help its developers get up to speed not only on the .NET Framework but also on a new language. Strickland views Microsoft's C# language as a better strategic choice than VB.NET, since from a syntax perspective, it's more similar to Java, the language the rest of the company's developers use. "If I move to C#, the VB guys can get there easier because the platform's kind of the same. They're used to the tool set," he says. "And the Java guys can get there fairly easily because the syntax is the same."

A.G. Edwards recognizes that it will likely have to do lots of new coding to replace its old VB6 applications. The company is also exploring the possibility of bringing in a vendor to help with a "double hop," migrating first to VB.NET and then to C#, Strickland says. Other VB6 applications likely will be decommissioned or replaced with packages, he adds.

With typical client/server applications, "where everything's entangled," the choice is often to leave the application alone or replace it, says Carl Zerie, an analyst at Forrester Research Inc. But an IT shop has a good chance of extracting usable interfaces with a well-architected VB6 application that has presentation, business logic and database layers.

That's the situation Berkshire Life Insurance Company of America found itself in with its three-tier disability income insurance claims system. The Pittsfield, Mass.-based subsidiary of The Guardian Life Insurance Company of America could migrate its VB6 application a layer at a time, leaving pieces in VB6 when there was no compelling business reason to upgrade to .NET.

Developers started at the back end, rewriting the data access layer in C# and ADO.NET, a shift that helped to improve the data access performance by about 20%, according to Tim Murray, a systems analyst. Developers also found themselves more productive in the new environment, because the .NET Framework handles more of the plumbing code.

Berkshire Life is now in the process of migrating the presentation layer to .NET, but developers left the business logic in VB6 because they saw no benefit to migrating more than 100,000 lines of business logic "that basically works," says Bill Chandler, second vice president of corporate systems at Berkshire Life. "Nothing in .NET would change the way we wrote those rules," says Murray.

.NET's Component Object Model (COM) Interop feature enables the team to maintain references to the old VB6 Dynamic Link Libraries. The company encountered "DLL hell" when the application couldn't find the old libraries it needed in only a few cases with third-party DLLs. To work around the problem, they put VB6 wrappers around those DLLs, says Murray.

"Overall, we've had a very positive experience with .NET and its interoperability with VB6," says Scott Dougherty, another systems analyst at Berkshire Life.

Jackie Goldstein, principal at Renaissance Computer Systems Ltd., a Hashmonaim, Israel-based member of Microsoft's Regional Director program, says he has had "ridiculous conversations" with clients who have asked him to help them come up with a plan to migrate millions of lines of code. He tells them that's not what they should be doing. Wrappers that are automatically generated for existing COM DLLs work fine in most cases, and only occasionally do they require "a little fix-up work" or an adapter, he says.

"When migrating, rewriting or converting, there's no silver bullet," Goldstein says. "Before you worry about migrating lines of code, you should spend time thinking about the architecture. You want to do it incrementally."

Billy Hollis, a Regional Director program member who owns Next Version Systems, a consultancy in Nashville, says a thorough code review is critical for any company moving to .NET. He says the tendency of VB6 developers is to write code to fix a problem. But they need to learn to write less code and let the .NET Framework do the work for them.

"You might spend three hours to research the framework and find something that does 90% to 100% of what you want," Hollis says. "Or you might have to extend the framework, but that's typically more efficient and effective than writing code from scratch." **Q 54838**

Helpful Links

- Microsoft Visual Basic Developer Center [QuickLink vb010](#)
- Visual Basic 6.0 Resource Center [QuickLink vb6020](#)
- "Visual Basic Application Migration Strategy" white paper [QuickLink vb6030](#)

Advice From the Source

Microsoft advises companies to evaluate the code quality and business value of their Visual Basic 6 applications when deciding if it's worth the effort to migrate them to the .NET development platform.

The company says migration exercises have shown that the overwhelming factors in predicting the success of a migration project are the initial quality of the code and the developers' experience in working with the .NET Framework.

Developers are advised to first migrate a VB6 application in discrete pieces, such as the presentation layer, and run the rest of it through the COM Interop feature.

In its white paper titled "Visual Basic Application Migration Strategy," Microsoft notes the following four modernization options for complete applications or parts of applications. The company says that many enterprise applications will use more than one of these strategies.

MIGRATE: Chances are that a VB6 application can

be migrated if it meets current business needs and the code quality is good. Jay Roxe, a VB product manager, says work done with about 30 enterprise customers at Microsoft's labs in Redmond, Wash., has shown that 60% to 90% of the VB6 code can be migrated to .NET using the code adviser and upgrade wizard.

REUSE: If the application contains well-factored business logic that won't migrate well, those pieces can be used through COM Interop while others are migrated.

REWRITE: If a VB6 application lacks the structure and quality to be effectively migrated, developers should mine and analyze the business rules and data structures to provide the starting point for the rewrite.

REPLACE: If VB6 code quality is poor and the application isn't critical to the business, an off-the-shelf package might be a good option if it provides at least half of the needed functionality. Outsourcing is another option.

- Carol Siliva



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CLOSELY HELD Applications

Maintaining some 300 homegrown applications isn't easy, but consumer electronics retailer Crutchfield Corp. says that doing so makes it more responsive to customers' needs. By Robert L. Mitchell

MAGINE if you wrote and maintained every major application in your enterprise. The good news is that you wouldn't have to wait for vendors to fix integration problems before making application upgrades. The bad news is that when application conflicts arose, fixing them would be entirely your problem. And as your infrastructure changed from, say, client/server to three-tier to service-oriented architecture (SOA), you would need to migrate everything yourself.

That's the situation at Crutchfield Corp., a Charlottesville, Va.-based catalog and online merchant of consumer electronics. The company has a staff of 500 people, with some 550 desktops and 100 servers to manage. And the IT organization wrote 85% of the code that runs inside the company, according to CIO Steve Weiskircher. His staff maintains 300 applications that run on Windows servers. Those applications include the Web site, warehouse management, point-of-sale, general ledger and order entry systems. The order entry system alone has more than 1 million lines of code.

With that many applications to manage, it's not surprising that Crutchfield has a relatively large IT staff for its size, including 18 full-time developers. But why take on the burden? "It's due to our entrepreneurial nature," Weiskircher says. "We know our business and data better than anyone else." By making the investment, he says, Crutchfield is able to achieve a level of business responsiveness that enterprise application software vendors routinely

promise but never seem to deliver.

The advantage of owning the code is that the IT staff can make changes quickly instead of waiting on vendors' revision schedules and priorities. "That does come at a cost when you have things like Windows XP SP2 or any other change to the infrastructure," Weiskircher says. Those types of changes cause the same problems for Crutchfield's homegrown applications that they cause for commercial applications.

PROPAGATING CHANGE

There are times when Crutchfield does look for outside help. A decision to move to Windows XP Service Pack 2, which was precipitated by the spyware battle that call center staffers faced while working on the Web, was delayed when Crutchfield discovered that its own applications were accessing areas of the registry and file system that SP2 was trying to close. With only four people available to manage the desktops, Weiskircher estimates that it would have taken six months to identify all of the application conflicts and track down the problems. "We didn't know everything that had changed since SP2, so we would have had to look for lots of variables," he says.

Weiskircher eventually ran across Identify Software Ltd.'s AppSight Black

Box application performance monitoring software, which automated testing and helped identify and trace problems. Using Black Box, the project went forward. It required a month for testing, followed by a week to upgrade 250 PCs in the contact center, where the spyware problem was most acute.

"The bulk of our problems — between 80% to 90% — were the result of permissions changes on specific portions of the file system or registry," says Bill Hamilton, client support team leader. Finding a specific key that has had its permissions changed was like looking for a needle in a haystack. "AppSight was like having a big red arrow pointing to the needle," he says.

While fixing all of the company's Visual Basic 6 programs to accommodate SP2 required a bit of work, Weiskircher says being able to work around problems with third-party software beats waiting for patches. "We can just adjust our code around that product," he says.

EYEING AN ERP SYSTEM

Crutchfield has weighed the pros and cons of going with a complete ERP system from a vendor such as SAP AG, but it rejected the idea. The problem with that scenario, Weiskircher says, is that you "buy a product off the shelf and then adjust your business processes to it." That's fine for some well-defined applications such as human resources or accounting. "But for what is unique in your organization, you can probably do better than someone who doesn't know your space or environment or business rules," he says.

Stuart Selip, an analyst at Burton Group in Midvale, Utah, isn't sure so much of the application infrastructure needs to be homegrown. "Essentially, they're in the software business," he says. Such investments are worthwhile only if an organization has a unique need that can't be satisfied by enterprise software offerings and if the company derives significant competitive advantage from custom applications, he says. But Weiskircher says Crutchfield's systems enable a close relationship with customers that its competitors can't match.

Crutchfield is looking into revamping its application infrastructure and is comparing each application against off-the-shelf alternatives. Weiskircher will OK a move to an off-the-

shelf product only if it fits cleanly into the organization and can do 80% of what the homegrown application does without a lot of customization. The applications must lower staff overhead for maintenance and management, freeing up resources to focus on more business-critical systems.

Crutchfield will be doing a lot of development over the next few years: Its application code is currently a mix of Visual Basic 6, VB.NET, C, C++, C#, ASP and ASPX. Its system architectures are a mix of client/server in the call center, three-tier in the online retail store and an n-tier Web architecture. The next step will be toward an SOA, Weiskircher says.

The question is how to get there with those 300 applications over the next three years. The company wants to migrate to the .NET platform, which

Crutchfield Corp.

BY THE NUMBERS

■ Revenue: \$220 million
■ Employees: 500, including 250 in the call center
■ IT Infrastructure: 300 custom-developed applications residing on 100 Windows servers run every major operation from order entry to the general ledger.
■ Percentage of business applications built and maintained in-house: 85%
■ Programming staffers required: 18
■ Problem: Recently completed upgrade to Windows XP SP2; reviewing applications against off-the-shelf alternatives; starting three-year migration to an SOA.

means moving some code from the procedural VB6 to the more object-oriented VB.NET. That's a lot of work.

"The goal is not to replace the VB6 code. That is a byproduct of the project. It is really a move toward an SOA and providing more flexibility to the business," Weiskircher says.

Crutchfield has also benefited from the flexibility of Web services and the .NET platform. Weiskircher discovered that he could consolidate business processes from the company's three retail channels into one Web service. "We can make incremental changes to reach the desired architecture over time without wholesale rewriting of applications," he says. **Q 54930**

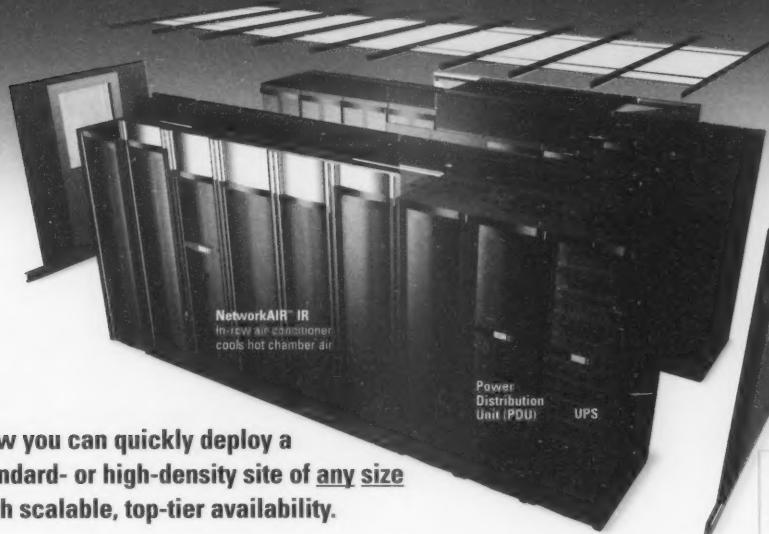


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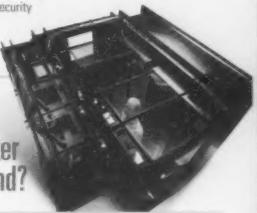


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BPEL

Business Process Execution Language is an XML-based language that's designed to run a series of Web-based transactions and/or characterize interfaces that are needed to complete Web-based transactions.

BY JAN MATLIS

FOR ITS ADVOCATES, Business Process Execution Language promises to be the capstone in the Web services standards stack that makes Web-based commerce work. It was designed to integrate a variety of applications that are run to achieve a particular business objective — and to do it in a way that's platform- and code-independent, not to mention one that's scalable and flexible.

It would be possible to hammer out Java code or a set of Unix scripts that could manage a series of processes — such as the steps taken by an insurance broker running a series of Web-based applications to match the needs of a customer — but the task would be laborious, and the finished code would likely be cumbersome. Writing a BPEL application, on the other hand, provides a layer of abstraction through which all the steps can be connected and managed.

Sitting in front of a BPEL designer graphical user interface, a business manager such as our insurance broker could define a business process in BPEL that would be independent of the underlying applications. If those applications were to change, the insurance broker's arrangement of them in the BPEL designer GUI could stay the same. Or if the

insurance broker's business plan changed, he could rearrange the processes, as well as add new ones or subtract others, within the GUI.

To run BPEL code that has been generated, either through a GUI or by an intrepid XML programmer, the code is parsed by a BPEL engine, which does the same kind of parsing job as other XML interpreters. Each process that's run is characterized by a Web Services Description Language (WSDL) document, and its messages are transmitted across the Web by the Simple

Object Access Protocol (SOAP). Processes that look up available Web services can use the Universal Description, Discovery and Integration (UDDI) directory.

In order to define business processes, BPEL has been endowed with a variety of XML constructs, including "partners," which are definitions of the actors in a business transaction; "containers," which are definitions of the messages that need to be transmitted; "operations," which are definitions of the type of Web services that are required; and "port types," which are definitions of the kinds of Web services connections that are required for operations.

BPEL's capacity goes beyond the range of traditional, definitional XML types. By defining processes, it blurs the

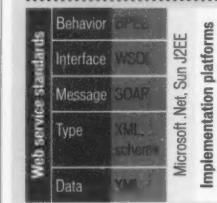
distinction between XML — a definition language — and executable languages like Java and Unix shell scripts; hence the "execution" in its name.

To define how processes should be executed, BPEL has XML definitions or commands that specify the order of operations, the looping of operations, and synchronous and asynchronous requirements for operations. (Synchronous operations block requesters until a request is either fulfilled or denied. Asynchronous operations allow requesters to continue without waiting for a response.) BPEL also has commands to take care of fault conditions and commands to undo or reverse operations.

An insurance-broker BPEL program, for example, might request financial information from a customer first, loop through insurance company offerings that it discovers from a UDDI search (some of which may be time-based offers) and finally present a package to the customer. If an error occurs or if the customer rejects the offers, even after tentatively accepting one, the BPEL program will make the proper adjustments.

Several major companies have been involved in defining BPEL, and many of them participated in previous efforts to create standards for business process execution for Web services. They include Adobe Systems Inc., Avaya Inc., BEA Systems Inc., Booz Allen

Standards Stack for Web Transactions



Hamilton Inc., Electronic Data Systems Corp., Hewlett-Packard Co., NEC Corp., Novell Inc., Oracle Corp., Panacea Corp., SAP AG and SeeBeyond Technology Corp. However, IBM and Microsoft Corp. have had the most impact on defining how execution works in BPEL. IBM's Web Services Flow Language, which uses a directed graph approach, and Microsoft's Xlang, which uses a block-structured approach, were brought together in August 2002 under the aegis of the Organization for the Advancement of Structured Information Standards to create the first draft of the BPEL standard.

Directed graphs specify the choices that must be made to get from one transactional state to another. For example, customer financial information must be received before insurance quotes are solicited. Block-structured languages of

fer the kind of programming flexibility familiar to Java, C and C++ programmers.

The consensus among analysts appears to be that BPEL will "orchestrate" business processes, meaning that centralized control of Web services will reside in a BPEL engine. However, the protocol seems to leave open the possibility for "choreographing" Web services at a future date. Choreographed Web services interact without being directed by a central, controlling program. The ability in BPEL to publish the execution requirements of a Web service would seem to be what's needed for the more decentralized vision of choreography.

Someday, instead of harried office administrators talking into three phones at once, or stock brokers monitoring banks of terminals while bidding in the seeming anarchy of the exchange floor, or even lonely consumers trying to synchronize airline, hotel and car reservations, BPEL engines may be doing it all with little more than the occasional mouse click from the humans involved. **54724**

Matlis is a freelance writer in Newton, Mass. He can be reached at jmtgpcmcm@aol.com.

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Environmental Issues

■ BPEL orchestration servers provide a runtime environment for executing BPEL business processes.

■ **BPEL servers work in both J2EE or .Net application server environments**, where they can make use of the services provided by application servers, such as security, transactions, scalability and integration with databases, as well as components such as Enterprise JavaBeans and messaging systems such as Java Message Service.

■ BPEL orchestration servers for J2EE:

- Oracle BPEL Process Manager
- IBM WebSphere Business Integration Server Foundation

■ IBM alphaWorks BPWS4J

- OpenStorm Software Inc.'s Service Orchestrator
- Vergil Technology Ltd.'s VCAB Server
- Active Endpoints Inc.'s ActiveWebflow Server
- ActiveBPEL Engine, an open-source technology released under the GPL by ActiveBPEL LLC
- Bexer BPEL Execution Engine, an open-source, J2EE-based BPEL engine
- Cape Clear Software Inc.'s Orchestrator, an enterprise service bus containing an enterprise BPEL engine
- FiveSight Technologies Inc.'s Process Execution Engine
- SeeBeyond's elnsight Business Process Manager

■ BPEL orchestration servers based on .Net:

- Microsoft BizTalk 2004
- OpenStorm Service Orchestrator

BRIEFS

Netline Releases Outlook Connector

■ Netline Internet Service GmbH is offering a connector that's designed to let users of its Linux-based Open-Xchange Server 5.0 run Microsoft Outlook clients for easy collaboration with existing Outlook users. The new Outlook connector can be installed on a Windows 2000 or XP client and allows Outlook 2000, XP and 2003 to be used, according to the Olpe, Germany-based vendor. Twenty-five OXlook connectors are included with the OX Advanced Server Edition, which sells for \$850; additional seats cost \$25 each.

Solaris Source Code Released

■ Sun Microsystems Inc. last week released most of the Solaris operating system source code to its open-source community, OpenSolaris.org. The release includes the code for the core operating systems, system libraries, networking, commands and major upgraded features in Solaris 10. The release of the code fulfills a pledge Sun made last year to make an open-source version of Solaris available.

Segue Upgrades Testing Manager

■ Segue Software Inc. in Lexington, Mass., this week is rolling out SilkCentral Test Manager 8.0, the new release of its application testing management software. SilkCentral is designed to define, measure, manage and improve application quality from requirements through predeployment, according to the company. Version 8.0 includes support for requirements management, test planning, test execution and issues management. The reporting features provide a dashboard view into overall project quality, with the ability to drill down into additional levels of detail, says Segue. Pricing starts at \$4,500 for one base license.

ROBERT L. MITCHELL

Selling Out On Standards

THIRTY-TWO YEARS AGO, IEEE participants hammered out one of the most successful standards ever developed. Ethernet succeeded in part because the big players involved at the time, including Xerox, Intel and Digital Equipment, donated intellectual property

(IP) to the specification. Those vendors weren't motivated by altruism but by enlightened self-interest: Each realized that a common standard would expand the market and provide more opportunities to sell Ethernet-based products.

Today, many vendors view the process that created Ethernet as a quaint relic of the past. The rules have changed, middlemen have been added, and it's users who will pay the price.

Now, rather than being content to recoup IP development costs indirectly by selling products based on new standards, vendors increasingly expect to be paid for the IP that they contribute. And a class of companies has emerged that doesn't produce products at all. Their business model is to develop IP, patent it and license it to others who then build the IT products and services you buy. The IP vendors participate vigorously in the standards process in order to ensure that the final specification includes IP covered by their patents. In this way, any manufacturer that builds a product based on that standard will need to buy a license from the vendors.

Standards organizations have had to relax the rules to accommodate pressure from vendors. At the IEEE, dealing with IP issues is now its biggest challenge. The World Wide Web Consortium, which insists on a royalty-free IP policy, has seen standards initiatives move to more flexible consortia, such as OASIS.

The concept of the royalty-free specification is being supplanted by "reasonable and nondiscriminatory" licensing



ROBERT L. MITCHELL
Computerworld's senior features editor. Contact him at robert.mitchell@computerworld.com.

terms, also known as RAND. In some cases, there are so many IP owners to pay off that building a product to conform with a standard has become onerous. To facilitate that process, a layer of infrastructure has emerged: the licensing agency, whose sole purpose is to act as a consolidator — a bill-payment service for the IP owners behind a given standard.

The most obvious example of this development has taken place in the digital rights management (DRM) arena. Here, the specification for the ISO standard MPEG REL, a rights expression language used in DRM implementations, is derived from IP owned by ContentGuard, a spin-off from Xerox. What's unusual in this case is that the IP reflected in the standard is wholly owned by a single vendor, says Trent Henry, an analyst at Burton Group.

The Open Mobile Alliance vendor consortium has backed a different language, called Open Digital Rights Language, as part of its OMA 1.0 DRM specification. But the amount of IP in OMA 1.0 that must be licensed from ContentGuard, InterTrust Technologies and others has weighed down the effort. When MPEG LA, an independent licensing agency serving the IP vendors, announced plans this spring to charge \$1 per cell phone to license those patents, the wireless industry balked. Negotiations are ongoing.

Bill Rosenblatt, president of Giant-Steps Media Technologies and editor of the "DRM Watch" newsletter, thinks the media industry brought this situation on

itself. Initially, both ContentGuard and InterTrust offered products in the DRM market. "The media companies that would most directly benefit from the technologies did not want to pay for it," Rosenblatt says. So both companies abandoned their products to focus on IP.

The DRM battle also involves political maneuvering, with Microsoft, Time Warner and Thomson being key shareholders in ContentGuard, and Sony Corporation of America and Philips Electronics controlling InterTrust. But this IP soap opera doesn't stop there.

ContentGuard, which claims its patents extend well beyond MPEG REL, is trying to extract licensing fees from every major vendor of DRM technology. "We think they are likely to infringe on one or more of the patents in our portfolio... because the patents are very broad," says interim co-CEO Bruce Gitlin.

Though DRM is largely a consumer-focused technology, the consumer sector often drives technologies that are used in business. In this case, DRM is the underlying technology in the nascent market for enterprise rights management software, which is used to secure and enforce access rights to corporate documents and e-mail.

Asking vendors to license IP in order to build industry-standard products adds to the cost of those products while making standards more difficult for manufacturers to follow. Ultimately, the products will be more expensive because IP patents, once required by standard, no longer face competition. IP is now standards overhead, a fixed tax or surcharge, on each product sold.

So standards, it seems, aren't what they used to be. This situation isn't likely to change unless users refuse to pay for the resulting products — or corporate IT pushes back by increasing its level of participation in standards organizations.

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8:15am to 8:25am	Introduction and Overview Don Tennant, Editor in Chief, Computerworld
8:25am to 8:55am	Trends in Enterprise Analytics Henry Morris, Vice President and General Manager, Integration, Development and Application Strategies, IDC
8:55am to 9:25am	Case Study: The Nature Conservancy Connor Baker, Director of Business Information, The Nature Conservancy
9:25am to 10:15am	How Technology is Transforming Business Intelligence Keith Collins, SVP and Chief Technology Officer, SAS Fran Burke, Manager - Eastern Area, Business Applications Group, Intel
10:15am to 10:45am	Refreshment and Networking Break
10:45am to 11:15am	Case Study Niis/APEX Group Holdings Jody Porrazzo, Ph.D., Director of Economic Risk Strategy, Niis/APEX Group Holdings
11:15am to Noon	Panel Discussion - From Gut Feel to Fact-Based Decisions: Real-Life Business, Political and Technology Lessons Learned on the Front Lines of Enterprise Analytics Moderator: Don Tennant, Editor in Chief, Computerworld Panelists: • Connor Baker, Director of Business Information, The Nature Conservancy • Jody Porrazzo, Ph.D., Director of Economic Risk Strategy, Niis/APEX Group Holdings • Henry Morris, Vice President and General Manager, Integration Development and Application Strategies, IDC • Keith Collins, SVP and Chief Technology Officer, SAS • Fran Burke, Manager - Eastern Area, Business Applications Group, Intel
Noon	Program Concludes

Selected speakers include:



Connor Baker
Director of Business Information, The Nature Conservancy



Jody Porrazzo, Ph.D.
Director of Economic Risk Strategy, Niis/APEX Group Holdings



Henry Morris
Vice President and General Manager, Integration, Development and Application Strategies, IDC



Keith Collins
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BETH EVERETT'S brushes with history have left her with better insights into worst-case scenarios. Everett worked at Novartis AG in 2001 and saw the company's global connectivity cut off when the network lines under the World Trade Center were destroyed.

Then she worked as CIO at Organon International Inc., which shared space in a Roseland, N.J., office park with a large financial services institution high on the list of potential terrorist targets. What would happen, she remembers thinking, if officials shut down the area and employees couldn't get to work?

And now, as a consultant at Network Inference Inc. in Carlsbad, Calif., she wonders how a potential hazardous ma-

Many CIOs have changed the way they think about disaster recovery. How about you?
By Mary K. Pratt

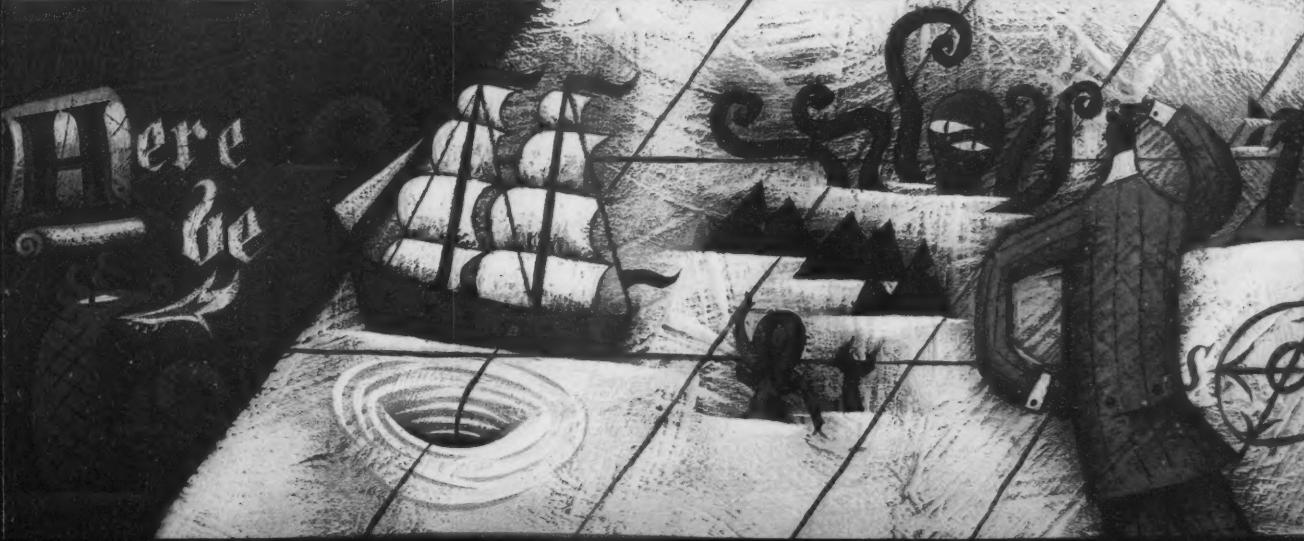
terials situation — a chemical spill or attack — might affect IT. Worries like these would have been unimaginable even five years ago. But world events have changed the way many CIOs think about their disaster recovery plans.

"There are definitely new threats out there," says Steven W. Agnoli, CIO at law firm Kirkpatrick & Lockhart Nicholson Graham LLP in Pittsburgh.

Some CIOs are imagining potential disasters that go well beyond the everyday hiccups that can disrupt applications and networks. Others, recognizing how integral IT is to business today, are focusing on the need to recover instantaneously from any unforeseen event. Many are trying to do both. But CIOs agree that disaster recovery planning has taken on an immediacy that didn't exist in the '90s.

Redefining

DISASTER



Simulation Surprises

Workers at Purdue Pharma LP had a rare chance to see how well their disaster recovery plan might hold up in a real disaster.

The Stamford, Conn.-based company participated in a government-sponsored disaster drill in April. Employees reacted to news of an explosion and a chemical attack in Connecticut as well as a bioterrorist attack in New Jersey. It turned out that the simulated events wouldn't have affected the company or its systems, but CIO Larry Pickett says he learned a valuable lesson about his ability to recover data.

In previous disaster drills, key employees would always gather at the company's disaster recovery facility in New Jersey. But in an actual disaster, he realized, they might not be able to get to that facility. "It made us step back and think, What if we couldn't access that facility for a few weeks?" he says. "Only by going through a mock disaster would that kind of detail come out."

— Mary K. Pratt

And they expect the threats to get worse. "The things you think about are, What will the virus/hacker people be able to do 10 years from now? What do I need to do to keep my capabilities ahead of the game?" says Rob Reeg, senior vice president of global operations at MasterCard International Inc.

"We need to be prepared for the next level of alert," says Joseph Daluz, vice president and CIO at Computer Horizons Corp. in Mountain Lakes, N.J.

Old Worries and New

When it comes to disaster recovery, the concerns are diverse. CIOs say they still worry about the traditional problems, from those manual errors and little snafus that can crash a system to natural disasters like fire and flood. But they've also added new concerns that range from catastrophic power loss and network attacks to employee sabotage and terrorist attacks.

Raj Sampath, chief technology officer at LoanCity, a wholesale residential mortgage lender in San Jose, has considered just about all those scenarios. He says his biggest fear is a hacker attack. "It's the unknown part — I don't know how or when it's going to be," Sampath says.

He says a successful attack could not only corrupt his system but also compromise the personal data of the company's customers. That's why he has a firewall manager — a combination of hardware and software that acts as the

first point of contact for the external world, manages the security of the company's systems, protects servers from hackers and allows only certain specified transactions. Sampath also diligently keeps security software updated.

He worries about other scenarios, too, such as earthquakes knocking out his primary data center and employees downloading infectious programs. So he sets up redundant systems, continually updates antivirus software, monitors employee computer use and uses technology from San Jose-based Sonasoft Corp. that automates the backup and recovery process for Microsoft Exchange and SQL and Windows servers.

Other CIOs draw their new list of concerns from current events such as the 9/11 terrorist attacks and the August 2003 blackout that affected the Northeast. They ask, "What if someone sets off a dirty bomb? Or launches a bioterrorist attack? What happens if the country's aging power grid fails?"

"It's a different world. There are so many more things to consider than the traditional fire, flood and theft," says Robert Rosen, a Bethesda, Md.-based CIO in the U.S. government and president of Share Inc., an IBM user group.

For example, as he toured a disaster recovery site last year, Rosen was impressed by its meticulous planning and features. Still, he was concerned when he heard a low-flying plane overhead, noting that a site's proximity to an airport — even a small one — means there's an increased risk of it being hit by a crashing aircraft.

"There's some risk there, even if the risk is pretty small. But it's one of the things you factor into your analysis," he says. "If I were [with] an organization that had to have total uptime no matter what, maybe I couldn't live with that risk."

But that doesn't mean CIOs have to prepare for every scenario they can imagine. Companies usually make their disaster recovery decisions based on cost and risk analysis, says David Palermo, vice president of marketing at SunGard Availability Services LP in Wayne, Pa. They prioritize risks according to the likelihood of various scenarios and the effect each one might have. "At some point, you're out of money and you have to make your choice," Palermo says.

A key to risk analysis is that it's not always about full-blown system failures; even small problems can have significant consequences.

"Disaster has taken on new meaning in this era of Sarbanes-Oxley and all this government regulation," says Mike

Kahn, managing director of The Clipper Group Inc., a technology acquisition consultancy in Wellesley, Mass. If regulators come knocking, they now expect companies to produce all the required data within hours — not weeks, as they once did, he says.

But regulations aside, "data is now just so important to ongoing operations [that] if you lose data and it's real-time data, that could actually impact your business," says Kahn.

READY OR NOT

A survey of top executives at 50 Fortune 1,000 companies showed mixed preparedness for mishaps large and small.

Among the findings:

78% don't feel completely prepared to handle a system disruption.

88% plan to get their systems back up as quickly as possible in the event of a disaster.

12% plan to keep their systems running 100% of the time.

36% say hackers are the biggest threat to their ability to access business-critical information.

32% say telecommunications breakdowns are the biggest threat.

54% have experienced a significant disruption of services within the past year.

Of those disruptions:

- **5.1 hours** was the average duration.
- **33%** were caused by a power outage.
- **22%** were caused by a virus or security breach.
- **22%** were caused by a hardware failure.
- **30%** caused companies to miss service-level commitments.
- **24%** caused customer dissatisfaction.
- **12%** caused revenue losses.

SOURCE: HARRIS INTERACTIVE INC. SURVEY COMMISSIONED BY SUNGARD AVAILABILITY SERVICES, AUGUST 2004

Anne M. Candreva, CIO at the Carnegie Library of Pittsburgh, agrees. "Technology is central to what we do, and if we lose our technology capability, we'll come to a halt."

Speedy Recovery

The best-prepared executives recognize that speed is essential in recovering from whatever disaster might come to pass, Kahn says. That's why there's a trend toward enabling technology users to restore their own documents, so a lawyer, for example, can retrieve a brief that took weeks to write but an instant to accidentally delete.

And in addition to regularly backing up to tape that's then stored off-site, companies are employing newer technologies to take snapshots — every five minutes, or every hour, depending on the business — to reduce the risk of potential loss, Kahn says.

But while the technology exists to ensure that a company doesn't experience a catastrophic loss of data even if its systems go down, experts say executives need to make disaster recovery a priority — and fund it appropriately — if they want to guarantee business continuity during almost any situation.

"There's no lack of products, and no lack of salespeople out there who want to sell them to you," Rosen says. "So it's not a technological issue any more. It's really a management issue and a will to do it. One of the problems is it's not cheap."

Robert Borr, CIO at Quincy Medical Center Inc. in Quincy, Mass., has tried to protect his organization from just about any disaster that could take out his systems. In addition to strict back-up procedures, he has agreements with hardware vendors to deliver new equipment within 24 hours if needed.

He pays extra for that but says, "If we can get computers delivered within 24 hours, we can be up and running seven or eight hours after that."

Others have taken even more aggressive approaches to guarantee that they're prepared for anything. Agnoli says his law firm increasingly focuses on building in redundancies to ensure that if an office system is taken out or an e-mail server goes down, another one can quickly take over, averting a crisis while the problem is being fixed.

"The goal," Agnoli says, "is to avoid ever having to get into a disaster recovery situation if we can." ☐ 54795

Pratt is a Computerworld contributing writer in Waltham, Mass. Contact her at marykpratt@verizon.net.

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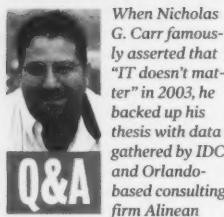
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SHARP

The End of Corporate IT? Not Quite

Recent data shows it's not how much you spend on IT; it's how you spend it.



When Nicholas G. Carr famously asserted that "IT doesn't matter" in 2003, he backed up his thesis with data gathered by IDC and Orlando-based consulting firm Alinean Inc. After Carr's recent prediction of the end of corporate IT [QuickLink 53976], Alinean CEO Tom Pisello told Computerworld's Kathleen Melymuka that continued research has raised some very interesting findings about the relationship of IT spending and business success.

Is Nicholas Carr on to something in touting the end of corporate IT?

Carr's claim that IT has become a commodity utility has fueled a two-year debate on whether technology investments deliver competitive advantage. On one hand, we agree that corporate IT often spends too much to "keep the lights on." Most companies invest more than 65% of IT budgets on basic infrastructure like PCs, servers, e-mail and storage.

But it's important to differentiate between infrastructure investments and strategic investments. Strategic IT investments, especially when closely aligned with business goals, prove that technology can deliver a competitive edge.

Q&A

What do the numbers say? Tell me what the Alinean/IDC pre-2003 research showed about IT spending and corporate performance. IT spending and performance research have to be examined in context with the market. When Carr used our 2003 research in his original *Harvard Business Review* article, market conditions were really tough. Back then, we found that top-performing companies, or those with the highest Economic Value Added, were notably frugal with IT dollars. These high performers were spending less than 1% of overall revenue on IT, while the average company spent 3.7% and the laggards were spending 2.7%.

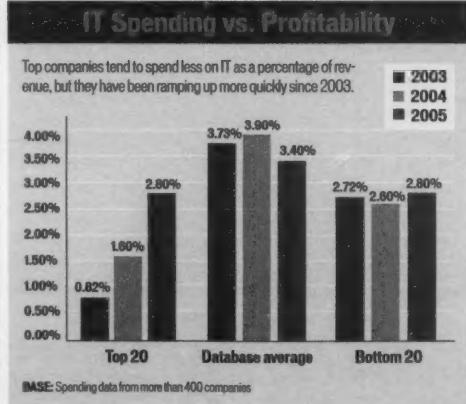
And continued research shows essentially the same thing, right? Yes, top-performing companies continue to be more frugal in their IT spending, spending 0.5% less on IT as a percentage of revenue versus the average

company. But the spending gap has narrowed significantly.

You say the research since 2003 shows that something else is going on. What is it? Leading companies have bumped up spending in recent years as market conditions improve. In 2004, they doubled investments in IT to 1.6% of revenue, and in 2005, [they] spent 2.8% of revenue. They're making up for frugal cuts in years prior and now are investing rapidly to ensure they're poised to capture market and growth opportunities.

What's the significance of this finding? Leaders are incredibly aggressive with spending. In contrast, average companies and laggards have held IT investment relatively constant, averaging 3.7% and 2.7%, respectively, over the past three years.

Also, when you look at IT spending



per employee, the picture changes. Tell me about that. Interestingly, leaders spend more per employee on IT than an average company — in fact, about \$500 more each year. IT investments help these companies do more with fewer people, or better manage outsourcing initiatives.

What the majority of companies care about most is the efficiency of IT spending and its ultimate effectiveness at driving corporate profitability. That's why we created the Return on IT [ROIT] metric, a ratio of a company's financial performance divided by IT spending.

The ROIT findings are dramatic. Leaders boast a 426% higher ROIT than average companies, spending less but getting more from each investment. Companies like Anheuser-Busch, Coca-Cola, Sara Lee, U.S. Bancorp, Johnson & Johnson, Dell, BellSouth and Procter & Gamble consistently deliver good performance, even in struggling markets or while facing unique business challenges.

You've tried to distill some commonalities among companies that achieve the highest return on IT investment. What have you found? While there is no single practice common to every company achieving a high ROIT ranking, certain philosophies hold true across the board. First, directing IT investments in support of initiatives that will fuel competitive advantage consistently delivers the greatest success. Second, fiscal discipline is important, but leaders cut costs of ongoing maintenance so that precious funds can be allocated to more-innovative initiatives. Third, agility in ramping or trimming spending keeps companies ahead of market conditions, maintaining profitability and a solid bottom line.

So where does all this leave Carr's argument? In many ways, basic IT infrastructure has indeed become a commodity that should be treated as a utility where cost reductions reign. However, lumping all IT investments into the commodity

category is the critical oversight in Carr's argument.

The new model you've developed to look at IT value is what you call the IT Hierarchy of Needs. Explain what the hierarchy is. Much like Maslow's Hierarchy of Needs in human development, the IT Hierarchy of Needs segments IT spending into four progressive levels.

The first level is basic IT infrastructure — the core foundation for corporate computing including servers, networking, storage, desktops, mobility and telecommunications.

The second level includes the tools to automate manual tasks and processes, streamline transactions and foster creativity and collaboration.

The third level includes all applications to support the collection, visualization and application of information to measure the business and drive improved performance.

The fourth and highest level is how a company uses its information to change the playing field by creating different relationships with suppliers, partners and customers, as well as applying competitive insight.

How does a company apply the hierarchy? Only when the most basic level of IT need has reached maturity can the organization successfully invest in the next highest level. Once the level of need has been met, the company should try to reduce that category's cost of ownership as much as possible, while making sure that the foundation remains solid. But the company can't stop there. Pursuing each next highest level in the hierarchy will keep it from falling behind the competition.

So, what should a CIO do about all this? The savviest of CIOs should be armed to illustrate this hierarchy of investments to their financial and executive counterparts, demonstrating infrastructure cost reductions and the ROI achievable by allocating free resources to the strategic investments that will drive bottom-line improvements. **• 54891**

Get smart about storage.

Executive Briefing:

The cover of the Executive Briefings report features the title 'EXECUTIVE BRIEFINGS' in large, bold, sans-serif capital letters. Below it is the subtitle 'Storage Strategies'. A small blurb reads: 'Regulators, data warehousing, e-mail and disaster recovery plans have sent storage demands soaring. Here are strategies for coping.' At the bottom, there's a table of contents and a note: 'STRATEGIC INSIGHTS FROM THE EDITORS OF COMPUTERWORLD'.

Get Smart About Storage

This new report offers practical advice about saving money, protecting data and implementing information life-cycle management.

store.computerworld.com/re/storage01.htm

Webcast:

The screenshot shows a webcast interface for 'Computerworld ON-DEMAND Online Presentation'. The title is 'Optimizing Public Television's Content Supply Chain'. It features a video player showing a man speaking, with the timestamp '00:00:00 / 00:00:00'. To the right, there's a list of bullet points under the heading 'Last one on board the IT train...':

- Television is
 - Bandwidth intensive
 - Extremely latency sensitive
 - CPU cycle hog
- Extremely risk averse
 - Super Bowl spot > \$2,000,000
 - Buy automation... operate it manually!!
- Lagging in the leveraging of IT technology

Below the video player, there's a section for 'Speaker' (André Mendes), 'Venue' (Storage Networking World, April 6, 2004, Phoenix, Arizona), and 'Resources' (links to 'Executive Briefings' and 'Storage Research & Content').

Storage - Optimizing Public Television's Content Supply Chain

In this webcast from Storage Networking World, André Mendes of PBS discusses some of his organization's unique storage, distribution and delivery issues.

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Linuxworld Conference & Expo includes tracks on the business case for Linux, such as maximizing competitive advantage with enterprise open-source, the legal landscape, and licenses and licensing; systems and application management issues, such as integrating with the rest of the enterprise and Unix-to-Linux migration; and enterprise security.

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BARBARA GOMOLSKI

Learning From IT Data Debacles

IT WAS THE BEST OF TIMES, it was the worst of times. The opening line from Dickens' *A Tale of Two Cities* seems appropriate to describe the current situation in IT risk management.

The worst of times: Unless you've been living in a cave, you're aware of several recent high-profile cases where mismanagement of IT risk has caused organizations great pain. Let's quickly review some of the more significant cases:

1. Last December, Comair canceled about 1,000 flights when its crew-scheduling software failed. (Ongoing performance and capacity planning, thorough application testing and proper risk management might have averted the disaster.) The incident stranded thousands of customers and inflicted a public relations wound on the ailing airline sector.

2. In February, ChoicePoint, a credit and personal information vendor, informed 145,000 consumers that they may have been victims of identity theft in connection with a data breach last fall.

3. In March, LexisNexis announced that more than 30,000 people may have been affected by breaches of its database security. The data broker later stated that the number of people potentially affected is closer to 300,000.

In addition, DSW and Bank of America have also had their brands tarnished by IT security woes. It seems that just about every day, some corporate stalwart finds itself in the national media spotlight over the mishandling of customer and corporate data.

And let's not forget about widespread phishing attacks, in which thieves use fraudulent e-mail accounts



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or Web sites to obtain personal account information from gullible consumers. Several U.S. banks have been victims of phishing, and in the U.K., such attacks recently caused a number of large banks to temporarily halt transfers of funds between their own accounts.

The best of times: Clearly, these IT security mishaps are bad for the companies involved. We're talking about serious business "outages" that are costing them millions of dollars and causing serious damage to their brands. So, how can these blunders be described as anything but horrific? Isn't this series of events a crushing blow to the battered image of IT?

While such IT security breaches are certainly unfortunate (and often preventable), they are valuable to the IT industry because they provide real-life examples of how interlinked IT and business have become. In particular, these breaches of IT security and mismanagements of customer data serve as a much-needed wake-up call to business leaders who believe they can cut IT budgets to the bone with no discernable impact on their operations except for healthier-looking bottom lines.

Just as the accounting scandals at

companies such as Enron focused corporations on compliance and financial propriety, these mishaps could bring the importance of the information management discipline to the forefront. In many organizations, this would be a welcome change.

For the past few years, many CFOs and CEOs have been systematically squeezing IT budgets — believing there would be no downside to their actions. Specifically, they have stripped IT budgets to the point where there are barely enough resources to keep the infrastructure and applications running — never mind supporting efforts to minimize IT risk. I believe that the recent flurry of IT risk problems is partly a result of that.

IT departments are so strapped right now that they have neither the time nor the resources to initiate the kinds of measures that could have prevented many of the recent IT risk debacles. Clearly, IT can't be seen as completely blameless in these incidents, and we all need to think long and hard about how we manage customer information. I cast more blame on the bean counters here than on IT, however. In their quest for more profits, these top executives have sold IT short. They have also failed to realize that IT risk and business risk are one and the same.

My advice to IT managers: Get your IT risk house in order. While you're at it, use these painful and dramatic lessons to paint a vivid picture for top executives of what happens when they continually squeeze IT budgets. Then give them the information they need to make the right decisions. It's sad to say, but your message is more likely to resonate now that a number of highly visible companies have suffered. ☐ **54799**

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Counting Cores

The newest processors cram two or more CPUs onto a single chip. Here's why the industry is moving to multicore and what you'll get out of it. [PAGE 48](#)

Pricing Penalty?

One chip, or two? How software vendors will charge for multicore chips is still a hot debate. Meanwhile, users like Southwire's Chris Easterwood are left to decide whether to adopt multicore. [PAGE 52](#)



OPINION

Hardware's Cool Again

Upgrading computers simply for the sake of faster microprocessors is so yesterday, says columnist Mark Hall. And so tomorrow, too. [PAGE 60](#)



ANASTASIA VASILAKIS

Multiple Cores, Multiple Challenges

SPECIAL REPORT

The new multicore chips are fast, but there are programming and licensing challenges ahead.

EDITOR'S NOTE

ANALYSTS SAY there are several megatrends in the world of computer hardware, including server virtualization, the transition from 32- to 64-bit processors, and the introduction of dual-core chips. This special report is about the latter.

The move to these multitasking chips is huge: By 2007, most of the processors shipped will have two cores. The dual-core chips provide the greatest advance in performance since the introduction of the 386, says

Gartner analyst Martin Reynolds, but he adds that developers and users must test and tune their software to receive the full benefit.

According to Reynolds, dual-core processors will deliver up to 70% better performance than a single-core processor of equivalent speed — for certain applications. He says the dual-core chips will be ideal for servers with processors working at high utilization rates (such as when they're running virtualization software), and for desktop applications such as media

editing, computer-aided design, simulation programs and Adobe Acrobat.

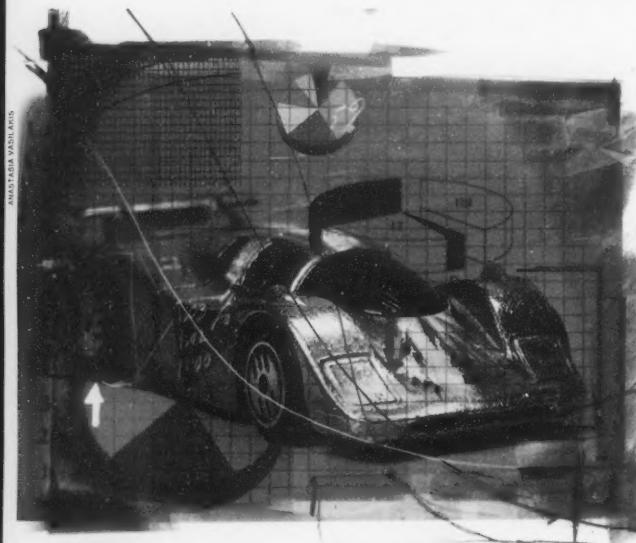
It's a pretty big change, which is why we've looked into the ramifications for corporate IT shops. What we found is that although there are some technical challenges, they pale in comparison with the software licensing issue covered by Patrick Thibodeau (page 52). Oracle treats dual cores as two separate processors for licensing purposes, for example, and I wonder just how long the market will tolerate that sort of financial penalty

for what the user views as simply a more powerful chip. Reynolds advises buyers to prenegotiate multicore software licenses to avoid a nasty budget surprise. [Q 54735](#)

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ANASTASIA YASHINSKAYA

Counting Cores

The newest processors cram two or more CPUs onto a single chip. Here's why the industry is moving to multicore and what you'll get out of it.

By Russell Kay and Patrick Thibodeau

In 1965, when he first set out what we now call Moore's Law, Gordon Moore (who later co-founded Intel Corp.) said the number of components that could be packed onto an integrated circuit would double every year or so (later amended to 18 months; see QuickLink 31559 for more).

In 1971, Intel's 4004 CPU had 2,300 transistors. In 1982, the 80286 debuted with 134,000 transistors. Now, run-of-the-mill CPUs count upward of 200 million transistors, and Intel is scheduled to release a processor with 1.7 billion transistors for later this year.

For years, such progress in CPUs was clearly predictable: Successive generations of semiconductor technology gave us bigger, more powerful processors on ever-thinner silicon substrates operating at increasing clock speeds. These smaller, faster transistors use less electricity, too.

But there's a catch. It turns out that as operating voltages get lower, a significant amount of electricity simply leaks away and ends up generating excessive heat, requiring much more attention to processor cooling and limiting the potential speed advance — think of this as a thermal barrier.

To break through that barrier, processor makers are adopting a new strategy, packing two or more complete, independent processor cores, or CPUs, onto a single chip. This multicore processor plugs directly into a single socket on the motherboard, and the operating system sees each of the execution cores as a discrete logical processor that is independently controllable. Having two separate CPUs allows each one to run somewhat slower, and thus cooler, and still improve overall throughput for the machine in most cases.

Designed for Speed

From one perspective, this is merely an extension of the design thinking that has for several years given us n-way servers using two or more standard CPUs; we're simply making the packaging smaller and the integration more complete. In practice, however, this multicore strategy represents a major shift in processor architecture that will quickly pervade the computing industry. Having two CPUs on the same chip rather than plugged into two separate sockets greatly speeds communication between them and cuts waiting time.

The first multicore CPU from Intel is already on the market. By the end of 2006, Intel expects multicore processors to make up 40% of new desktops, 70% of mobile CPUs and a whopping

85% of all server processors that it ships. Intel has said that all of its future CPU designs will be multicore. Intel's major competitors — including Advanced Micro Devices Inc., Sun Microsystems Inc. and IBM — each appear to be betting the farm on multicore processors.

Besides running cooler and faster, multicore processors are especially well suited to tasks that have operations that can be divided up into separate threads and run in parallel. On a dual-core CPU, software that can use multiple threads, such as database queries and graphics rendering, can run almost 100% faster than it can on a single-CPU chip.

However, many applications that process in a linear fashion, including communications, backup and some types of numerical computation, won't benefit as much and might even run slower on a dual-core processor than on a faster single-core CPU.

Power and Performance

Two users who have tested AMD's Opteron dual-core chips and moved them into production say they are getting performance that's close to double the processing performance of a single chip.

Neal Tisdale, vice president for research and development at NewEnergy Associates, an Atlanta-based firm that conducts intensive analytical testing for the natural gas industry, has been using the Opteron dual-core chips supplied on systems built by Sun.

Tisdale says Sun is putting in an address decoder for each CPU, which increases throughput on his four-way machines. Address decoding helps a CPU access memory more efficiently.

Intel is now discussing whether it should allow users to speed up one of the two CPUs on a dual-core chip beyond its original design speed to boost performance. Called overclocking, this is done routinely by computer gamers, but it does lead to hotter operation and a greater chance of failure. Intel normally warns strongly against overclocking, citing possible permanent damage to the processor and perhaps other system components, including the motherboard. Other potential problems include the inability to boot, calculation errors, shorter processor life — and a voided warranty.

Cashing in on Cache

AN IMPORTANT element of any CPU design – one that accounts for using up many of those millions of transistors – is the amount of on-chip cache memory that is included.

Cache design – and having adequate amounts of cache – is critical to overall CPU efficiency. Those parts of a CPU that actually execute instructions spend a lot of time waiting around for slower I/O devices, such as memory chips and hard drives, which means that faster processors don't always make for faster computing.

Chip designers have figured out tricks to get around these problems, such as the use of branch prediction, multiple pipelines and hyperthread-

- ing, but they go only so far. When an instruction requires data that's already in the processor's second-level cache, it may have to wait only one or two cycles, and during that period, it may be able to execute (out of normal order) other instructions that don't depend on the result it's waiting for.

- Unfortunately, such out-of-order execution can't handle more than a dozen or so instructions, and if the CPU has to wait for data from main (not cache) memory, it will be held up for periods during which it could otherwise execute hundreds of instructions. For more on cache memory, see QuickLink a6140.

– Russell Kay

But some vendors limit the number of address decoders on the chip, and that crimps performance, says Tisdale. "It actually depends what [server] vendor you buy from as to how much dual-core does for you," he says.

Another industry that sees chip performance as a competitive edge is travel. Customers want to choose from hundreds of flight and hotel options when booking travel online, and it's the system's task to deliver them quickly, says Alan Walker, vice president of technology prototyping and integration at Sabre Holdings Corp. The Southlake, Texas-based company operates Travelocity and other online travel-booking services.

"You can never be fast enough or cheap enough for this type of processing," says Walker. Sabre has always used Opteron chips and began testing the dual-core versions on Hewlett-Packard Co. ProLiant servers, which were shipped to its outsourcer, Elec-

tronic Data Systems Corp.

The IT team spent a week testing the system and put it into production two days before AMD officially released the chip in April. "There were no installation issues," Walker says. "They put the same system image on the dual-core machine, and it booted without any problems."

Walker says he anticipates a bright future for dual-core Opteron chips, as long as the software scales reliably across a large number of systems. "These dual-core Opterons are way ahead of anyone else," he says. **© 54314**

Kay is a Computerworld contributing writer in Worcester, Mass. You can reach him at russkay@charter.net.

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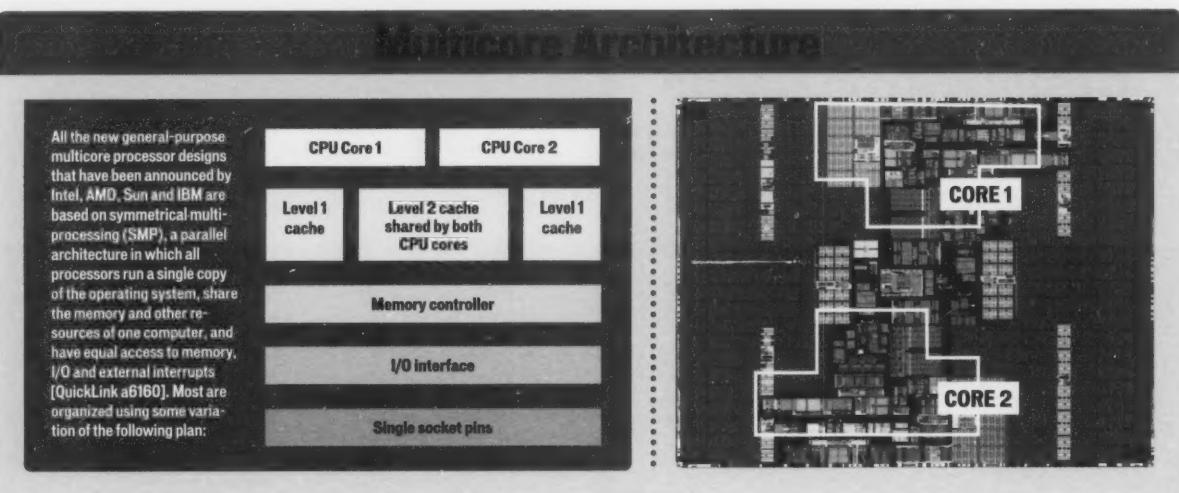
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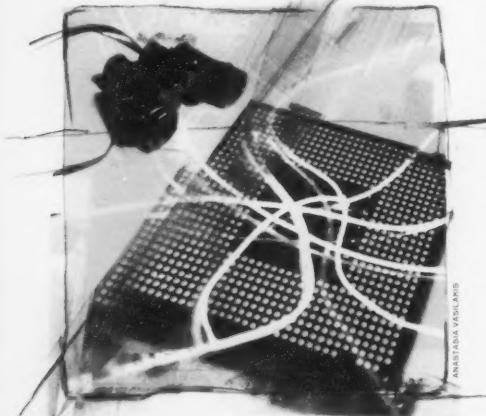
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Future Chips: Hundreds of Threads



CHIP MAKERS ARE ALREADY
creating designs that stretch beyond
two cores.

Just last month, Raza Microelectronics Inc. in Cupertino, Calif., began shipping its XLR processor line with up to eight cores operating at a frequency of up to 1.5 GHz. Each processing core supports four threads, or simultaneous instructions, for 32 total threads.

The product family is aimed at con-

verged networking and computing applications, according to the company. It will reportedly be in manufacturers' equipment late this year.

Sun's 90-nanometer UltraSPARC IV chip for high-end servers, code-named Niagara and due in 2006, will also reportedly support up to eight cores, each handling four threads.

Meanwhile, as the industry moves to 65nm technology, more transistors will fit on the same silicon real estate.

"Operating them at a slightly lower frequency and voltage allows chips with four or more cores to run without significantly increasing the power envelope," explains Jeff Austin, product marketing manager in Intel's business client group.

Intel's Tukwila processor, the first in the company's 65nm Itanium processor family for multiprocessing servers, will contain four or more cores and is due around 2007.

Austin says he also expects that between 2008 and 2010, Intel will ship single-processor implementations supporting up to eight threads using parallel-execution cores or cores with symmetric multithreading. On the server side, that translates into 32 parallel threads, he says.

"In the next 10 years or so, we're looking at tens to hundreds of cores within a processor, including special-purpose and asymmetric cores, to deliver hundreds and thousands of parallel-capable threads," Austin says.

Real-World Translation

Driving the multicore activity is the desire to achieve greater performance with as much power efficiency as possible. In cell phones and mobile computers, this means "being able to do more-complex applications without

running out of battery really fast," says Sven Behmer, CEO of Foster City, Calif.-based PolyCore Software Inc., which offers multicore software development and management tools.

On the desktop, says Austin, the need to run virus scans and other hefty programs in background mode while maintaining strong foreground response time is pushing performance demand, as is the need to manage streaming high-definition content.

"Games can take advantage of greater degrees of parallelism and threading for... using artificial intelligence instead of predefined actions [to calculate what happens] when you face off with a robot or to compute how glass breaks when you jump through a window," says Austin.

On the server side, Intel also sees multicore as benefiting the enterprise trend toward data center consolidation. In a virtual computing environment, enterprises can merge several software environments onto fewer machines and distribute tasks across different virtual machines.

Behmer observes that having multiple processors on a chip may make it possible to increase the yield in the manufacturing process. "If one of four is defective, you could sell a two- or three-processor chip," he says. "So

you could use a higher percentage of what comes out of the process."

Multicore systems offer innovation for gaining performance advantages but also affect existing software deployments and developer skills.

For example, Ken Kennedy, director of the Center for High Performance Software Research at Rice University in Houston, notes that "many applications will need to be parallelized if they want to see performance boosts on such processors."

Development has some challenges, however. Most operating systems are designed to run on a single processor. And while symmetric multiprocessing is relatively simple in that the operating system handles the task of load balancing, says Behmer, asymmetric multiprocessing leaves the partitioning of tasks across multiple threads to the developer.

An increasing number of processors – including hardware accelerators, digital signal processors, filters and other specialized components – are showing up. For that reason, Behmer says he expects the importance of memory, as well as connection subsystems for moving data as efficiently as possible among them, to increase. He predicts that as a result, a "network on a chip" – such as a mesh of wires among components or multilevel buses – will likely emerge within a decade or so.

– Joanie Wexler

What's Out There

■ Systems using Intel's first dual-core chip, the Pentium Processor Extreme Edition 840 running at 3.2 GHz, went on sale April 18. These initial multicore systems weren't aimed at the business market but rather at computer hobbyists and entertainment enthusiasts. They offer increased capabilities for audio, high-definition video and 3-D visualization.

According to an Intel spokesman, the company has more than 15 multicore projects under development and is set to introduce its mainstream, high-volume dual-core Pentium D processor later this year. Incidentally, these multicore CPUs don't come cheap: the Intel Pentium Processor Extreme Edition 840 is priced at \$999 in 1,000-unit quantities.

For the enterprise market, Intel plans to ship a dual-core 64-bit Itanium 2 proces-

sor, code-named Montecito, built using 90nm process technology, in the second half of 2005. The next-generation chip will contain more than 1.7 billion transistors and a 24MB cache.

In the first quarter of 2006, Intel intends to deliver two optimized 64-bit Xeon dual-core processors.

■ Advanced Micro Devices' first multicore releases, the Opteron family, feature one die with two CPU cores. Each core has separate Level 1 and L2 cache hierarchies. The two CPU cores share the same integrated memory controller and HyperTransport technology resources that AMD has used in its single-core Opteron processors.

Dual-core AMD Opteron processors can be inserted into existing 940-pin sockets, provided that the BIOS is updated. Sunny-

vale, Calif.-based AMD announced its first dual-core server and workstation products on April 21.

Initial reports indicate that AMD's dual-core processors run faster than Intel's. Dual-core client processors are expected to follow in the second half of this year.

■ Sun Microsystems has been talking seriously about multicore processors since 2003. Later this year, Sun is expected to ship its next-generation UltraSparc IV CPU. Code-named Niagara and designed for network-intensive tasks, the new CPU could put as many as eight cores onto a single chip destined for blade servers.

Further down the UltraSparc road map is the Rock family, which will be tailored to more computational tasks, such as databases, ERP systems and encryption, according to David Yen, executive vice president of Sun's scalable systems group.

UltraSparc is primarily used in servers, and it competes with IBM's Power processors and Intel's Itanium and Xeon chips.

Sun also plans to market systems using AMD Opteron dual-core CPUs.

■ IBM's 64-bit Power5 CPU, introduced last year, features two processor cores with separate L1 (64KB instruction, 32KB data) cache but shared onboard L2 (1.075MB) and off-chip L3 (typically 36MB) caches. These are used primarily in IBM's own server families running the AIX, Unix and Linux operating systems.

IBM is also engaged in a completely separate multicore processor project, the Cell microprocessor, with Sony Corp. and Toshiba Corp. Designed for compute-intensive workloads and broadband rich-media applications, the Cell includes a 64-bit Power processor core connected to eight synergistic digital signal processing cores capable of floating-point processing. Cell's multicore architecture and high-speed communications capabilities are designed to support multiple operating systems simultaneously.

- Russell Kay

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ANN STATES

SOUTHWIRE'S CHRIS EASTERWOOD says that if software vendors consider dual-core systems as two processors, "then the extra benefit we get out of dual-core goes away."

Pricing Penalty?

One chip, or two? How software vendors will charge for multicore chips is still a hot debate.

By Patrick Thibodeau

IF CHRIS EASTERWOOD, IT services director at Southwire Co., installs dual-core chips in his servers, he may get an unwelcome surprise: a license fee increase from his database software vendor, Oracle Corp.

For pricing purposes, Oracle is counting a dual-core chip as two chips. That means if Easterwood puts a dual-core chip in a socket previously occupied by a single-core chip, he expects that his database software licensing costs will roughly double. As a result, he's less likely to adopt the

new technology, he says. Although Carrollton, Ga.-based Southwire had revenue of \$2.2 billion last year, wire manufacturing isn't a high-margin business, and IT dollars are watched carefully. If software vendors consider dual-core systems as two processors, Eastwood says, "then the extra benefit we get out of dual-core goes away."

In fact, some industry experts expect a broadly negative reaction to any decision by software vendors to charge based on core.

"Unless software companies and the industry in general start rethinking the whole licensing thing, they're going to be in trouble, because it's going to stop people from implementing the technology," says John Abbott, chief analyst at The 451 Group in New York.

But despite user concerns, software licensing issues haven't slowed down the chip vendors. Intel Corp. and Advanced Micro Devices Inc. expect to install dual-core technology in more than two-thirds of the servers shipped by the end of next year. In time, nearly all servers will have multicore chips.

"The industry is going to have to cope with multiple-core processors as being the standard," says Graham Lovell, senior director of x86 servers at Sun Microsystems Inc., which produces servers based on AMD's Opteron chips.

Continued on page 54

At the Bargaining Table

IT PAYS TO BE BIG. That's one advantage for United Parcel Service Inc. when dealing with software vendors.

"When we are looking at new technologies, we don't get hung up on licensing aspects," says John Nallin, vice president of information services at the Atlanta-based delivery company.

The first question is whether a technology realistically provides a benefit to UPS, says Nallin, whose IT department has an advanced technology group that investigates new products as early as two years before their release. UPS is now evaluating dual-core chips from Intel and AMD.

Nallin says reaching a deal with software vendors regarding use of dual-core is a matter of negotiation. "I don't remember going to a vendor who was promoting a new product and having the vendor tell me that they are not going to adjust whatever the obsta-

cle is to make both of us successful," he says.

Tacoma, Wash.-based Auto Warehousing Co., North America's largest automobile processing company, isn't small either, but CIO Dale N. Frantz says his neighbor, Microsoft Corp., can be a tough customer on licensing issues.

Frantz says he's considering adding Microsoft's BizTalk Server on a four-way server. But the vendor wants \$40,000 per processor, or \$160,000 total, he says, and "that's a problem." Frantz will put off installation of BizTalk and see if Microsoft changes its licensing approach.

Frantz says the problem with licensing reaches well beyond Microsoft. "I think the software industry is going to have to adapt to these new technologies," he says. "They just can't continue to stack up the cost."

- Patrick Thibodeau

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But while all servers might soon have dual cores, software licensing will be far from uniform. Indeed, three of the biggest software vendors seem to be taking different approaches. IBM will make licensing decisions on a case-by-case basis, Oracle will count a dual-core chip as two chips, and Microsoft Corp. intends to treat a dual-core chip as a single chip.

IBM has told Power5 dual-core customers that those processors will be counted as two chips because users are getting "full benefit" of the processors — in other words, performance two times that of a single core. In response to an e-mail question, IBM said it can do this because the Power5 is in its third generation of dual-core technology. But installing a single dual-core x86 chip isn't the same as putting in two chips.

Chip vendors say dual-core users can expect performance gains of about 1.3 to 1.8 times that of one CPU, largely depending on the application that's running. Because of that, IBM considers the dual-core x86 chips as a single processor for software licensing. But as the chips improve, IBM might alter its plan and count dual-core as two chips. An IBM spokesman says the company will "constantly evaluate" its licensing approach based on customers' reported chip performance.

Oracle's licensing policy is similar to IBM's for its Power5 dual-core processors. The company says that as the dual-core x86 processors advance, they will offer performance equal or better than two separate chips.

That's in part why Oracle views dual cores as two processors for licensing, says Jacqueline Woods, vice president of global licensing and pricing strategy. In making her point, Woods cites IBM's approach for software licensing on the Power5 chip. While dual-core might not deliver two times the performance today, she says, it will likely offer performance gains of double or more. "As the performance on those chips does improve, our pricing will stay the same because we are agnostic in that area," Woods says.

Several years ago, Oracle tried pricing based on performance, with its universal power unit. But as chip megahertz increased by leaps, so did software licensing prices, prompting some user complaints. Oracle dropped the power-unit idea, focusing instead on per-CPU pricing.

Woods says the company is unlikely to return to a license formula based on chip performance. Oracle's licensing prices don't necessarily double, even if the cores do, she says, and the company offers discounts as the number of chips increase, in addition to other license plans that are based, for instance, on numbers of users.

Paying for Power

But for users who pay based on CPU usage, dual-core is just the beginning. Chips with four or more cores based on the x86 architecture, as well as in RISC-based systems, will be arriving as early as next year (see "Future Chips," page 50). Indeed, multicore chips can get very large. For example, a network-attached computing appliance recently developed by Azul Systems Inc. has 24 cores per chip.

Yuri Aguiar, senior partner and chief technology officer at New York-based Ogilvy & Mather Worldwide Inc., is testing the Azul systems. He says licensing models will have to adapt to new technologies,

Are Platform Changes Ahead?

REGARDLESS OF THE LICENSING SCHEMES that software vendors adopt, chip makers report that by the end of next year, the vast majority of servers sold will include dual-core chips.

But while dual-core technology could soon dominate the server market, users aren't likely to rush out and purchase dual-core chips for the performance gain, says John Humphreys, an analyst at market research firm IDC. "It doesn't seem like most users are capacity-constrained, so there's not a lot of need to add capacity quickly," he says. Humphreys says the dual-core adoption pattern among most users will be similar to transitions to chips with higher clock speeds, like a move from 1 GHz to 3 GHz, for instance.

Both Intel and Advanced Micro Devices expect that greater than 85% of the servers shipped by the end of 2006 will have dual-core chips.

Officials at AMD and Intel say market pressure in the form of decisions by big software vendors such as Microsoft to treat dual-core as one chip, as well as customer demands, will ultimately drive vendors to treat dual-core chips as a single chip.

"Fundamentally, dual-core isn't necessarily replacing a platform that may have had two discrete processors earlier; dual-core is the evolution," says Jeff Austin, desktop product marketing manager at Intel in Austin.

However, the unknown question, says Humphreys, is

- whether software licensing terms on dual-core chips will prompt some users to move to applications that count a dual-core as one chip, not two.

That's what rivals of Oracle and other software vendors hope will happen.

For example, Zack Urlocker, vice president of marketing at open-source database services company MySQL AB in Uppsala, Sweden, says dual-core "will hasten people's evaluation of open-source software" because anytime there is a shift in architecture, users tend to look at their software and infrastructure at the same time.

But in those cases where software vendors count dual-core as one chip, the licensing cost may be offset in other ways. For instance, if a company consolidates applications onto a larger server that is running dual-core chips and improves processor utilization, it may also be able to cut administration and hardware costs.

Joanne Kossuth, CIO at Franklin W. Olin College of Engineering in Needham, Mass., says licensing ultimately does have an effect on the college's product purchases. But for now, she sees a disconnect between the hardware and software vendors in the way they sell their products.

At some point, Kossuth says, these vendors "will have to come up with some sort of solution" so that licensing by a software vendor "does not negatively impact the sale of new technologies."

- Patrick Thibodeau

lest software vendors risk defections to open-source platforms such as MySQL or PostgreSQL databases.

"Even if the uptake is slow in the beginning, many of these databases are proven and will be adopted by more people than we expect if licensing terms don't change quickly," says Aguiar.

Users such as John R. Dick, CIO and executive vice president at Birmingham, Ala.-based Regions Financial Corp., want the increased power of dual-core chips without having to pay what they consider a software pricing penalty.

Dick sees dual-core chips as a "scalability option" for his firm — a way to increase performance. He feels he isn't likely to take a two-processor server and replace it with one running a single dual-core to cut his software licensing charges. He simply wants the performance gain. "The pricing proposition vis-à-vis other alternatives in the market would, over time, drive you to a different product," he says.

The reality is that any licensing change by the vendors will have a negative impact for some IT group somewhere.

In the case of virtualization, per-CPU pricing "works to our benefit if we are able to deploy several system images on a CPU," says Madge Meyer, executive vice president and head of global IT infrastructure services at financial services firm State Street Corp. in Boston. Dual-core chips may "create a negative impact on the cost of licensing if the software vendors decide to treat a dual-core CPU as two CPUs, and they will probably build a strong case for doing so," she says.

It could mean having to move away from counting physical CPUs to pricing based on the number of times a separate application is running on the chip.

Such a move would provide software vendors with some additional revenue "but will likely not take away all of the benefits of virtualization so as not to kill the golden goose," says Meyer.

What's Next

It remains to be seen whether multicore chips will fundamentally change how users pay for software. Some believe that software vendors may have to move toward an open-source pricing model, earning revenue from maintenance and support and not from per-CPU pricing.

Randy Roth, a partner at Corporate Contracts LLC, a consulting and contract negotiation firm in Urbandale, Iowa, says software pricing is making users think harder about what they're spending. "We have been seeing more companies willing to limit the amount of software that they will license, because of the difference in the perceived value in what they get out of the software and the increasing cost of running that software."

The per-CPU pricing model was adopted for its simplicity, but virtualization and multicore technology change that, says David Znidarsic, vice president of technology at Santa Clara, Calif.-based Macrovision Corp., which makes licensing management systems.

He says few software applications can deliver "linearly increased performance" as CPU capabilities increase. The result, says Znidarsic, will be increasing tension between "the end users who are wanting proportional value of the price increases and the software publishers who are challenging their engineering departments to deliver proportional value to the number of CPUs." ■ 54560

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Mass-Market Multicore



In the new world of multicore, IT must overcome challenges in desktop software and partitioning. **By Steve Ulfelder**

FOR VENDORS and end users alike, the ascent of multicore processors is as beneficial as it is inevitable. Vendors (of chips, hardware, software, networking gear — the works) will get to roll out products with a high buzz factor, while users will revel in the seemingly ceaseless Moore's Law march: ever-cheaper, ever-faster, ever-better computing.

Stuck in the middle are IT professionals, who must make it all work.

The writing is on the wall: Multicore chips will soon dominate the technology landscape. The good news is that for now, developing software for multicore processors differs little from developing for the multiprocessor systems with multiple chips in common use. Boosting performance by adding chips to achieve symmetric multiprocessing is an old IT standby, particularly in database servers, heavy number-crunching and other data-intensive applications.

In addition, as multicore evolves, look for vendors

to offer tool sets that help you optimize your code for multicore, as well as prewritten code modules that remove the burden entirely. Vendors, like enterprise developers, will also hone their ability to write applications that take advantage of multicore's inherent advantages.

While IT professionals experienced with servers won't see a major difference between multiprocessor and multicore work, those whose experience is limited to the desktop — where multiprocessing is an alien concept — will have to adapt. "As dual-core gets out, it'll be the first time multiprocessing ever hits the mass market," says Alan Zeichick, a multicore development expert and principal analyst at Camden Associates in San Bruno, Calif. "People who have always developed for desktops... will need to learn to write threaded apps."

Enterprise developers may also find new challenges in partitioning applications. "C and C++ are sequential languages with no concept of running in parallel," says Sven Brehmer, CEO of PolyCore Software Inc., a Foster City, Calif.-based vendor of multicore development tools. To partition an application written in these languages, you must break the application apart, then run some portions of it on one processor and other portions on another. "When you take these parts and move them, you need to make sure you don't destroy variables or the way data flows from the source to the destination," Brehmer says.

Turf Battles?

Because multicore chips place two or more independent CPUs on a single silicon die, some wonder if their Achilles' heel will be data movement to and from those CPUs.

"There have been some performance bottlenecks when [multicore-equipped systems are] running different applications that are both fighting for the same I/O path," says Zeichick. But he stresses that to date, these bottlenecks have been minor.

Concern over data bottlenecks is natural because the issue often arises in today's multiprocessor servers. "Anytime you have multiple processors, you've got to move data around the system, and that requires close attention," says Brehmer. "Most systems today have shared memory and a bus. That's simple but limited — you have bus contention." Brehmer predicts that as multicore evolves, alternatives to simple buses will arise: direct links, multilevel buses, "even connection fabrics inside the chip."

While advanced bus alternatives may be a boon in the future, experts say that in the near term, the key to multicore development is the same as in any multiprocessor system: careful development of multithreaded applications (that is, programs whose various portions can run simultaneously) so that threads don't interfere with one another. Multithreading is also the secret to multicore's potential speed benefits.

Beyond the Black Box

SKILLS

So, what do you do now to make sure you're in the catbird seat when multicore technology really hits the corporate computing landscape? Experts say the best advice is to nurture all the skills needed to thrive in any multiprocessor environment — in particular, the ability to write multithreaded applications.

In addition, a set of tools, best practices and even optimized code is evolving. Today, most of these resources are used by PC software developers at vendors seeking to update packaged applications for multicore. However, the resources will soon filter out to all developers.

For an example of the multicore tools coming online, look at Intel Corp., which is naturally eager to help developers at packaged-application vendors. The company has launched a program dubbed Threading Enabler that offers the following pieces:

- A performance analyzer that lets developers study code to find areas in which data flow can be optimized.
- A library of already optimized code for common functions and subroutines. "This lets developers pull functions and thus skip coding and optimizing them altogether," says Jeff Austin, desktop product marketing manager at Intel.
- Compilers created specifically for multicore code.
- A tool called Thread Checker that finds potential conflicts among thread interactions.

Many believe that the growth of multicore chips will force IT professionals at all levels to sharpen their skills, if only by pushing multiprocessing deeper into the computing consciousness. "We need better programming education in general," says Russ Miller, director of the Center for Computational Research at the University at Buffalo in New York. "Much of today's programming is done in black-box style."

Carnegie Mellon professor Babak Falsafi agrees. "We're going to see a paradigm change where we teach concurrency from the very beginning," he says. Falsafi adds that this will be a gradual shift that could take more than a decade. But eventually, he says, multicore processing will drive "a paradigm shift that will ensure multithreading and concurrent as basic skills."

—Steve Ulfelder

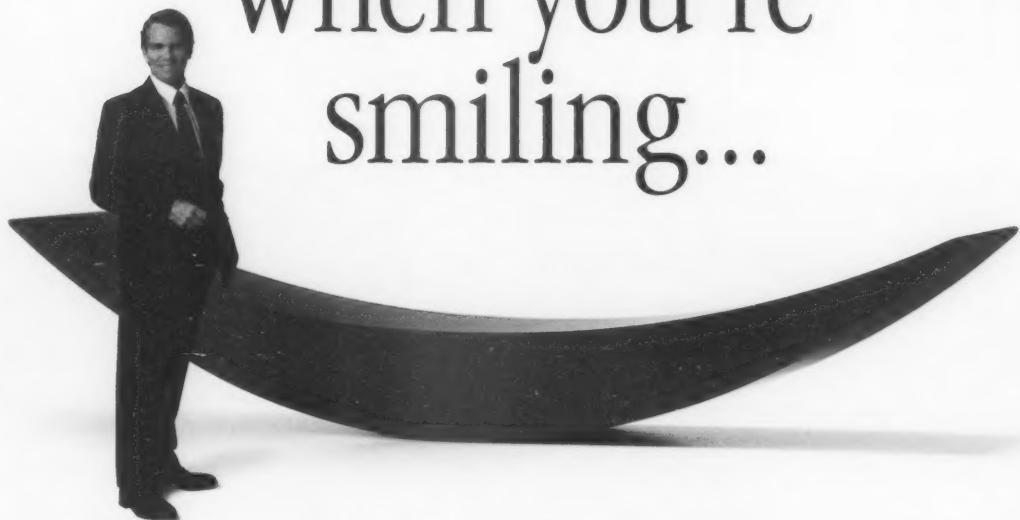
"Most IT-grade software today is multithreaded, so IT people are accustomed to it," says Babak Falsafi, an associate professor at Carnegie Mellon University's Computer Architecture Laboratory in Pittsburgh.

Virtually all modern applications have at least some multithreading; the ones that don't tend to be ancient batch-processing applications such as home-grown payroll-processing systems.

While skeptics say multicore may be a bigger boon for the PlayStation generation than for IT, most enterprise software will see improved performance as the technology matures. "Early on, we've seen some minor performance bottlenecks when running different apps trying to share the same I/O path," Zeichick says. "But those will be overcome. The simple truth is, this is the future." **Q 54320**

Ulfelder is a Computerworld contributing writer. Contact him at steve@ulfelder.com.

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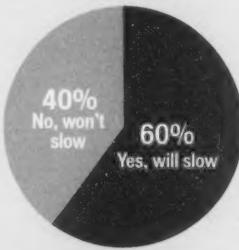
Are server sales slowing?

A survey of 100 CIOs by New York-based Merrill Lynch & Co. shows there's no sign of that yet. But analyst Steven Milunovich says virtualization may change that by temporarily reducing demand for new servers.

Is your spending on servers accelerating, slowing or staying the same?



As virtualization is more widely used, do you think it will slow server spending until utilization rates are higher?



Base: 100 CIOs (75 in the U.S., 25 in Europe)

SOURCE: MERRILL LYNCH & CO., NEW YORK, APRIL 2005



8GB in a Square Inch

Hitachi Global Storage Technology Inc. in San Jose is planning to launch an 8GB version of its Microdrive 1-in. hard disk drive in the fourth quarter of this year, says David Chen, a field application engineer at the company's Taiwan branch. The Microdrives are used in cellular phones, PDAs and other handheld devices.

— Martyn Williams,
IDG News Service

Tired of Waiting for Windows Boot-up?

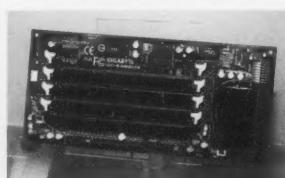
Taiwanese hardware maker Giga-byte Technology Co. has stumbled upon a faster way to boot up PCs based on Microsoft Corp.'s Windows XP operating system.

Giga-byte's iRam is a PC add-in card

with four DDR DRAM (double data rate dynamic RAM) slots that's designed to be used as a PC drive.

Because the iRam uses DRAM rather than a hard disk to store information, data can be retrieved from the drive up to 60 times faster than is possible with a hard drive, according to Giga-byte, which showed the board at the Computex exhibition in Taipei this month.

The iRam was originally designed for video and editing applications whose users require fast access to very large files, but Giga-byte soon realized that the product had other potential applications, says company spokesman Tim Handley. For example, users can install Windows on the iRam and use it as the drive for starting the system, Handley says. When the card is used in this way, starting Windows XP takes a matter of seconds, rather than a minute



U.S. Congressional Group Eyes E-waste Disposal Laws

FOUR MEMBERS OF THE U.S. HOUSE OF REPRESENTATIVES have created the Congressional E-Waste Working Group to work on standardizing national laws for the recycling and disposal of discarded electronic and computer equipment.

The bipartisan working group will explore potential solutions to the growing electronic waste problem and educate members of Congress about its consequences. More than 50 million computers are disposed of each year, according to the working group, and the machines contain harmful elements, such as lead, cadmium and mercury, that can leach into the environment if not disposed of properly [QuickLink 43804].

"E-waste is a national problem that needs a national solution," Rep. Louise Slaughter

(D-N.Y.) said in a statement. "Since the year 2000, we've increased the number of electronics entering the waste stream by at least 10 million units. As we continue to dispose of more and more units each year, finding a national disposal approach becomes more and more critical. We can no longer afford to ignore this growing problem."



Joining Slaughter were Reps. Mike Thompson (D-Calif.), Randy "Duke" Cunningham (R-Calif.) and Mary Bono (R-Calif.). The working group hopes to hold a congressional hearing on the issue this summer.

Two states, California and Maine, already have e-waste laws, and Maryland recently joined them in the cleanup effort, according to the working group. Another 24 states are considering their own laws. But that creates a problem for computer and electronics makers, retailers and others, because they will face different disposal laws in different states, the working group said. Instead, standardized regulations are needed to create uniform disposal procedures across the country.

Manufacturers have tried to create standards in the past but have been split on how best to devise such a program. ■ **54894**
— Todd R. Weiss

Three Questions

What percentage of your server purchases are blades today?

11%
AVERAGE

What will the percentage be in three years?

35%
AVERAGE

From which vendors do you buy blades?

IBM
Hewlett-Packard Co.
Dell Inc.

BASE: 100 CIOs (75 in the U.S., 25 in Europe)

SOURCE: MERRILL LYNCH & CO., NEW YORK, JUNE 2005

or more, according to Handley.

The iRam holds up to 4GB of DRAM in four memory slots. The card fits into a standard PCI slot, which provides power, and it uses a Serial ATA connection for data transfer. The iRam will be available next month and will be priced at around \$60 without DRAM.

— Summer Lemon,
IDG News Service

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SNAPSHOTS

Server Spending Up

Increased spending in Asia-Pacific helped drive revenue for the top five vendors.

2004 server revenue, compared with 2003:

1	IBM: \$18.3 billion (up 10.3%)
2	Hewlett-Packard Co.: \$13.0 billion (up 4.4%)
3	Sun Microsystems Inc.: \$5.1 billion (down 3.9%)
4	Dell Inc.: \$4.6 billion (up 11.4%)
5	Fujitsu/Fujitsu Siemens Computers: \$2.8 billion (up 2.2%)

SOURCE: IDC, FRAMINGHAM, MASS., FEBRUARY 2005

PCs on the Rise

Continued strength in Europe, the Middle East and Africa helped spur growth.

First-quarter 2005 PC shipments, compared with first quarter 2004:

1	Dell: 8.7 million (up 13.6%)
2	Hewlett-Packard: 7.1 million (up 10.6%)
3	IBM: 2.3 million (up 2%)
4	Fujitsu/Fujitsu Siemens: 2.1 million (up 14.0%)
5	Acer Inc.: 1.8 million (up 34.1%)

SOURCE: IDC, APRIL 2005

Handhelds Dip Again

2004 was the third straight year of decline since the market's peak in 2001.

2004 shipments of handheld devices, compared with 2003:

1	PalmOne Inc.: 3,645,399 (down 9.0%)
2	Hewlett-Packard: 2,492,539 (up 9%)
3	Dell: 695,171 (up 18.9%)
4	Sony Corp.: 418,832 (down 70.1%)
5	Motorola Inc.: 234,325 (up 18%)

SOURCE: IDC, FEBRUARY 2005

MARK HALL

Hardware's Cool Again

A few years ago, when your users complained about sluggish response times from an application, the solution was easy: Upgrade the machine that ran the software and watch it fly. Not so these days. N-tier applications are running on multiple Web, database and application servers, interacting with legacy back-end systems while pushing asynchronous packets across multiple LAN

segments and even across the Internet. With all that happening, you can never assume that a server's aging processor is to blame for pokey performance. In fact, it's highly unlikely that a computer's CPU is your bottleneck. Microprocessor performance has improved so much, especially in the past five years, that it's increasingly difficult to rationalize steady hardware upgrades just to run something a wee bit faster. Most 4- and even 5-year-old servers seem to handle their application loads just fine.

The serious performance problems in your production systems are elsewhere these days. Undoubtedly they'll be software flaws or network gridlock, neither of which would be fixed with a faster box. So why bother?

Well, starting this year, getting new hardware for hardware's sake in many situations will begin to make sense all over again. That's because next-generation servers using AMD's dual-core Opteron chips are becoming available from the likes of Hewlett-Packard, IBM and Sun Microsystems. And next year, Intel and its vast army of reseller partners will be touting computers based on its dual-core microprocessors.

There's been a lot of finger-pointing in the press lately that Intel failed in its bid to counter AMD's Opteron. It's true. AMD beat the world's biggest semiconductor maker to market with dual-core systems. But I think any market-share advantage AMD has today on that front will fade when the Intel juggernaut hits its stride by year's end.

Needless to say, you'll benefit from less expensive and more powerful computers as both companies fight to get bragging rights for the cheapest, fastest, best dual-core technology. There's no downside for IT here.

Dual-core technology promises to give data center managers distinct advantages in performance, management and operating costs that can't be ignored. Each dual-core microprocessor packs two CPUs on a single die. They communicate with each other over a high-speed fabric. Multicore systems will probably appear by the end of the decade. These will have four, eight and even more CPUs all packaged together as a single chip.

You can imagine how fast these machines will perform. But if you're running applications tuned by developers to use threads for parallel processing environments, you will get exceptional performance because dual-core systems can leverage software designed for parallel processing.

Another improvement in the dual-core systems will be vastly improved thermals. According to The Uptime Institute (TUI) in Santa Fe, N.M., servers and other data center equipment have been power hogs, increasing their watts per square meter of data center space at a rate of 15% or more each year since 1992. TUI estimates that the new technologies being delivered by AMD and Intel should slow that power consumption growth to less than 5% per year as new dual-core systems replace older, electricity-sucking computers. Intel claims the watts per square meter in the data center will actually decline with wide deployment of its dual-core systems.

While this is good news for the data center, does it mean anything for your end users' machines? I think so. Intel and its partners plan to introduce a slew of management tools that will use the extra processor to apply corporate IT policies to a given computer without affecting the end user's experience. You could also use the management processor for security — to constantly monitor virus signature updates, shut down spyware, delete spam and defend against hackers who attack the machine.

In some situations, you'll even be able to eliminate one PC from certain workers' desks. Stacy Smith, Intel's CIO, says dual-core systems will let him snag one redundant machine from some engineers who now depend on separate Linux and Windows PCs. He will replace them with a single laptop sporting Linux on one CPU in the core and Windows on the other.

So, maybe it's time once again for hardware to drive your upgrade cycle. Think about the improved management and security of systems. Consider the savings on your growing energy bills. And, oh yes, don't forget about the wee bit of extra performance you'll get for your applications. That counts, too. **54321**



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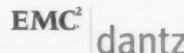
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IT Careers: Hot Skills Spotlight on C#, .Net

In a sign of change, engineering and technology leaders are searching for ways to measure the productivity of software developers using Visual Basic languages, such as C# and .Net. The reasons are simple: from litigation software to financial compliance software to collaborative design software, the basics today are the many capabilities of C# language and tools to create web-enabled .Net capabilities.

Job boards boast of literally hundreds of listings in the C# and .Net space, from staffing firm Spherion to niche software development boutiques.

Robert Half Technology's second quarter jobs report says internet/intranet enabled applications are the second most sought-after development skill set, second only to networking. Katherine Spencer Lee, executive director of Robert Half Technology, says design collaboration tools continue to gain demand across all businesses, but that improving customer service and the customer experience on a site are critical.

These have been most evident in direct consumer operations, such as banking, financial services and insurance. A goodly number of the job board postings reflect an increased demand by boutique firms in Manhattan, evident of the resurgence of hiring among software providers for the financial district.

And while C# and .Net have brought about an evolution in programming skills, there is a next step to watch for. According to Carl Zetie, vice president and an analyst in Forrester Research's Application Development & Infrastructure research team, aspect-oriented programming will address some of the problems that object-oriented programming doesn't. In a report issued earlier this spring, Zetie notes that language experts should work through the issues surrounding object-oriented design rather than move entirely toward aspect-oriented programming. Regardless, the debate about the two approaches is something that decision makers will be looking at in the coming months.



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Continued from page 1

Risk

where banks and brokerages often are entrusted with the life savings of their customers.

"Customers don't care if you lost a data setting or a system — they want to feel secure about where they're investing their money," said Bruce Pomerantz, head of IT infrastructure and architecture for corporate investment banking and markets at New York-based HSBC Securities (USA) Inc.

Several conference speakers noted that IT risk management issues are now being addressed as business decisions, reflecting the degree to which IT has become tightly intertwined with business units.

For Bank of America Corp., "it becomes an insurance equation at some point — What are we willing to spend to avoid a risk event?" said

Graham S. Seel, global treasury services technology risk executive at the Charlotte, N.C.-based bank.

Getting Ahead

As part of its risk management efforts, Prudential Financial Inc. in Newark, N.J., gave itself a jump-start in complying with regulations such as the Health Insurance Portability and Accountability Act and the Sarbanes-Oxley Act.

The financial services firm created a "first alert" database system eight years ago to help it review all pertinent new regulations and create action plans for each affected area in the company, including IT, said Mario Mosse, Prudential Financial's vice president of corporate risk management.

For example, the approach helped the company create a separate automated database to store all of its Sarbanes-Oxley documentation procedures, Mosse said.

Mitigating IT Risk**TIPS**

- Organizations that develop most of their software in-house should carefully consider the risks of outsourcing requirements planning. Relationships between internal developers and business customers are typically stronger than with third parties.
- Ensure that outsourcing contracts give your company the right to conduct periodic audits of your vendors.
- Create a vendor monitoring system so that business managers who are accountable for risk in their departments are also monitoring risks related to the vendors they work with.
- Consider adopting a controls framework to apply a common approach to enterprise risk management.
- Coordinate policies between IT, human resources and legal departments to stem the amount of intellectual property that departing employees can take from your company.

When Dow Jones & Co. begins working on large-scale projects, it makes additional IT architecture and infrastructure investments to help support the new systems as they go into production. Such moves are meant to serve as a preemptive risk-mitigation

strategy, said Jonathan Squire, information security architect in the business publisher's Princeton, N.J., office.

For example, as part of its efforts to support changes in handling Visa and MasterCard credit card transactions, Dow Jones created a more scalable,

Continued from page 1

NetApp

technology as part of a search for data security systems.

Hughes, director of IT at Independence Air Inc., said he will look into buying Decru's DataFort encryption appliance over the next few weeks. The Dulles, Va.-based regional airline installed a NetApp FAS960 network-attached storage array last March, and Hughes said NetApp provides some legitimacy to the Decru system. He also likes the idea of having a single point of contact for both storage and encryption products.

Independence Air had recently started looking at encryption products as part of an effort to comply with new information security requirements from MasterCard International Inc. and Visa U.S.A. Inc. and to keep from joining the list of companies that

have lost customer data.

"If my customer data gets compromised, there'll be news vans outside of my building," Hughes said. "I need to find some mechanism to protect my data while it's residing on my network shares and disk."

Market Rush

The acquisition by Sunnyvale, Calif.-based NetApp trumps the rest of the industry in what will likely be a rush by other vendors to either acquire or develop their own storage security technology, said Jon Olsitsk, an analyst at Enterprise Strategy Group Inc. in Milford, Mass.

Although storage security currently is only a \$60 million market annually, Olsitsk predicted that within two years, "you won't be able to have a conversation with a client about storage without talking about security."

Rich Mogull, an analyst at Gartner Inc. in Stamford,

Conn., said large businesses are nervous about facing the bad publicity that accompanies data loss or theft. Such fears have been driving the storage security market over the past six to nine months, Mogull said.

He added that the market will be further stimulated by the backing of a large storage vendor like NetApp.

Since February, security breaches have caused the loss of unencrypted data from companies such as Bank of America Corp., Ameritrade Holding Corp., Time Warner Inc., ChoicePoint Inc. and LexisNexis Group.

To protect itself, Boeing Employees Credit Union (BECU) for the past eight months has been encrypting all data written to backup tapes, using an appliance from Decru to guard against unauthorized access to information moved off-site.

Daniel Chow, IT systems

JOINING FORCES

Decru Inc.
Redwood City, Calif.

Founded: 2001
Funding: \$45 million
Employees: 70

Network Appliance Inc.
Sunnyvale, Calif.

Founded: 1992
2004 revenue: \$1.1 billion
Employees: 2,844

and security engineer at BECU, said the "buzz around security and data at rest" prompted his company to deploy encryption technology. "We wanted to make sure we were being proactive," he said.

Companies are also increasingly being pressured to encrypt data by federal and state privacy regulations such as

centralized support system to handle fraud detection across different areas of the company, Squire said.

IT risk management considerations should also extend to contract negotiations with vendors and outsourcers, said Warren Axelrod, director of global information security at Pershing LLC, a financial services firm based in Jersey City, N.J.

"Usually, the more powerful negotiator tries to shift the risks [for the contract] onto the less powerful negotiator," said Axelrod. A technique to mitigate risks in outsourcing deals, said Axelrod, is to ensure that the customer is achieving cost savings and that the vendor is able to glean a profit. © 55086

MORE THIS ISSUE

Recent data security failures provide valuable lessons in the importance of IT risk management. Make sure your executives learn them, writes Barbara Gomolski. Page 44

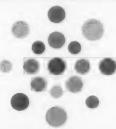
the Gramm-Leach-Bliley Act and the California Database Breach Notification Act.

Other, smaller vendors in the data encryption appliance business include NeoScale Systems Inc., Kasten Chase Applied Research Ltd. and Vormetric Inc.

The deal between NetApp and Decru is expected to close in October. "We just think there's a great market opportunity. Decru... is clearly the market leader," said NetApp CEO Dan Wärmenhoven. "You look at the approach they've taken, and it's incredibly aligned to our own. It's an appliance-based model."

Wärmenhoven said he would keep Decru independent and set it up more or less as "an internal OEM to the Network Appliance sales force and channels." At the same time, Decru will maintain existing reseller arrangements that it has with NetApp competitors, Wärmenhoven said. © 55081

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FRANK HAYES ■ FRANKLY SPEAKING

Disk Crypto Redux

YOU'VE GOT ANSWERS, I've got questions. Your responses are coming in fast about my column last week on Seagate's forthcoming hard disk drive that automatically encrypts everything on it [QuickLink 54920]. I think built-in, transparent encryption is a great idea that should be extended to just about everything IT departments provide — including networks, file servers, and tape backup systems.

But as many of you point out, it's not so simple.

"From a security analyst's perspective, if the technology is easy to

use and cost-effective, users may speed up adoption of these drives at the expense of other security measures," one reader writes. True enough — but should we pass on a chance to add a layer of security, even if it may make more security a tougher sell?

Or should we just not tell users the encryption is there, so the money comes from the hardware budget instead of the security budget?

Speaking of telling (or not), that reader also wants Seagate and other vendors to tell us their encryption algorithms so we can assess their strength. I asked Seagate, whose representative told me the current design uses Triple DES with 192 bits' worth of keys. That may change, he said, but "we will most certainly use a public and standard algorithm." Good answer.

Another reader says, "Users need to grow up a bit in their understanding of technologies and the risk that they are the cause of. IT needs to stand up to users and enforce standards. Currently, security is technology, process and people, and the third leg is where it falls over."

And what about office politics, which lets powerful users stay risky and makes IT afraid to lay down the law? We won't change human nature, and we can't overhaul the pecking order overnight. So we're stuck with education, plus technology and process. Or is there another way that we're missing?

From a consultant: "What Seagate should provide, or if not what internal IT should develop independently, is a Trojan horse that grabs the password as the user enters it and registers it in a protected password vault. If the Trojan turns out to be technologically unfeasible, IT can at least provide a facility on the company intranet for voluntarily registering the password."

Does IT really want to get into the virus-writing game? On the other hand, is voluntary registration enough? IT can control passwords for the drives we install on users' machines, but can those passwords be changed? Should they be changed regularly? Or is the drive's password also an encryption key, in which case changing the password would mean re-encrypting the entire drive?

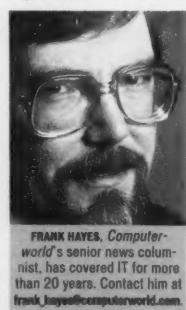
"As soon as you have entered your password, this doesn't protect your data," adds another reader. "All those back doors, worms, Trojans, et al., can still read your data and send it over the Internet. This doesn't explain how data will be protected on the backup server, either."

Too true. Getting encryption built into IT products is a little more protection — but it's no panacea. But is any single layer of security ever going to be enough?

Finally: "I tried to envision how 'invisible encryption' would work, and could not. When a machine (a laptop, say) is turned on, a password would be required at a very early stage; otherwise, a thief would be able to boot up and get access. So how would users manage that password? That's where the rubber meets the road in terms of trade-offs of a good key and good transparency."

OK, it's not a panacea and it's not truly transparent. Can we use a single sign-on approach, so the drive, operating system and network all open up from one password typed once? Are we better off with a pile of passwords that users may stick on their laptops with Post-it notes? And will we ever find the right trade-offs to make better security easy — or at least easier?

Until we start crash-testing products with built-in encryption, we'll never know. ☀ 55053



FRANK HAYES, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

Unclear on the Concept

Pager goes off, and sysadmin pilot fish checks her voice mail. "My monitor is smoking and making noises," user's message says. "I think it's on fire. Can you take a look at it?" Fish sprints to the user's office and pulls the plug on the smoldering monitor. Relieved user: "Thanks, it was getting hot in here." Says fish, "I'll never understand why he stuck to the IT support procedure but not to any fire-hazard safety ones."

Wire Loose

At a meeting at this cell phone service provider, tech pilot fish is going into detail about the importance of core fiber cabling capacity to meet the growing demand of the mobile network. But baffled marketing guy interrupts: "Cables? Cables? We're wireless, guys!"



had printed each address on the list on its own page for me to sort."

Close, But . . .

Sysadmin pilot fish is watching over midrange systems on the evening shift when he notices a fellow midrange IT guy who's having trouble with his PC. "His computer crashed and wouldn't reboot," fish says. "He said he had a huge bunch of old Excel files that he didn't recognize and no longer wanted. When he deleted them, the computer failed. I asked him just what exactly he did. He said he searched for all the .exe files and deleted them."

Probably Not

This pilot fish's IT shop is improving its processes, and fish is training software developers in the new estimation procedure.

"I indicated that while we have a procedure to follow and a template to document their estimates, sometimes they have to use judgment to know what and when to estimate," fish reports. Trainee's response: "Well, how do we know when to use judgment? Is that documented anywhere?"

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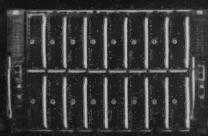
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